

\$SPAD/src/input Makefile

The Axiom Team

July 31, 2014

Abstract

Contents

1	Introduction	3
1.1	genericRules	3
2	Testing stanzas (to be added)	4
3	The regression testing Makefile	6
4	The Makefile	15

1 Introduction

This creates the `mnt/sys/input` subdirectory. The files are known as “input” files which are a list of Axiom commands. Each file (say “foo.input”) can run in an Axiom system with the command:

```
)read foo.input
```

Each of the files in this subdirectory is intended to achieve a three goals. First, the file shows examples of how to use Axiom algebra. Second, the file is used as a regression test to show that Axiom properly executes the algebra. Third, the file contains documentation on known bugs or missing algebra.

It is important to collect as many examples as we can of working algebra. In particular, we need machinery to extract algebra from other pamphlet files and automatically make them into input files. The more algebra we collect, use, and regression test the more robust the system will be.

When used to build a shipping system the default stanza “use” will build files that show working algebra examples.

When used for regression testing the stanza “regress” is used to build all of the working examples, run them, and compare them against known good output. Differences are highlighted and need to be documented or fixed.

When used for bug testing the stanza “bug” is used to build the algebra with known bug chunks included. These are run to check that known bugs have been fixed before shipping. Fixed code should be moved to the “regress” status, new working examples are built and the system should be built using “regress” to check that the build did not break anything.

1.1 genericRules

We use the special `.PRECIOUS` target to prevent deletion of the intermediate `.input` files which are needed during the processing of `regress` target.

— genericRules —

```

${OUT}/%.input: ${MID}/%.input
@ echo si01 making ${OUT}/$*.input from ${MID}/$*.input
@ cp ${MID}/$*.input ${OUT}/$*.input

.PRECIOUS: ${MID}/%.input

LISPTANGLE=${OBJ}/${SYS}/bin/lisp

${MID}/%.input: ${IN}/%.input.pamphlet
@ echo si02 making ${MID}/$*.input from ${IN}/$*.input.pamphlet
@(cd ${MID} ; \
    echo '(tangle "${IN}/$*.input.pamphlet" "*" "$*.input")' | \
    ${LISPTANGLE} )

${OUT}/%.as: ${MID}/%.as
```

```

@echo si03 making ${OUT}/${*.as} from ${MID}/${*.as}
@ cp ${MID}/${*.as} ${OUT}/${*.as}

${MID}/%.as: ${IN}/%.as.pamphlet
@echo si04 making ${MID}/${*.as} from ${IN}/${*.as.pamphlet}
@(cd ${MID} ; \
    ${BOOKS}/tanglec ${IN}/${*.as.pamphlet} >${*.as})

${DOC}/axiom.sty:
@echo si05 making ${DOC}/axiom.sty from ${BOOKS}/axiom.sty
@cp ${BOOKS}/axiom.sty ${DOC}

${DOC}/%.input.dvi: ${IN}/%.input.pamphlet ${DOC}/axiom.sty
@ echo si06 making ${DOC}/${*.input.dvi} from \
    ${IN}/${*.input.pamphlet}
@ if [ "${BUILD}" = "full" ] ; then \
( cd ${DOC} ; \
cp ${IN}/${*.input.pamphlet} ${DOC} ; \
latex ${*.input.pamphlet} ; \
dvipdf ${*.input.dvi} ; \
rm -f ${DOC}/${*.input.pamphlet} ; \
rm -f ${DOC}/${*.input.dvi} ; \
rm -f ${DOC}/${*.input.aux} ; \
rm -f ${DOC}/${*.input.log} ; \
rm -f ${DOC}/${*.input.toc} ) ; fi

${DOC}/%.as.dvi: ${IN}/%.as.pamphlet
@ echo si07 making ${DOC}/${*.as.dvi} from ${IN}/${*.as.pamphlet}
@ (cd ${DOC} ; \
cp ${IN}/${*.as.pamphlet} ${DOC} ; \
${EXTRACT} ${*.as.pamphlet} ; \
rm -f ${DOC}/${*.as.pamphlet} ; \
rm -f ${DOC}/${*.as.tex} ; \
rm -f ${DOC}/${*.as.dvi} ; \
rm -f ${DOC}/${*.as} )

```

—————

2 Testing stanzas (to be added)

— testing —

```

.SUFFIXES: .input .out

TESTSYS= ${OBJ}/${SYS}/bin/interpsys

```

```

IN= ${SRC}/input

MID= ${INT}/input

OUT= ${OBJ}/${SYS}/input

INPUT=  ${MNT}/${SYS}/src/input

DOC=    ${MNT}/${SYS}/doc/src/input

all: announce
@ echo si08 making ${MID}
@ cp -p ${IN}/*.input ${MID}
@ cp -p ${IN}/axiom.test ${MID}/axiom.input
@ cp ${IN}/Makefile.int ${MID}/Makefile
@ (cd ${MID} ; \
    for i in *.input ;do \
        if test ! -f 'basename $$i .input'.rec ;then \
            echo aging ${MID}/'basename $$i .input'.rec ; \
            ${TOUCH} 0101010189 'basename $$i .input'.rec ;fi ;done)
@ (cd ${MID} ; ${MAKE} -f Makefile 'echo *.rec' )
@ cp ${IN}/Makefile.obj ${OUT}/Makefile
@ cp -p ${MID}/*.rec ${OUT}
@ cp -p ${IN}/axiom.test ${MID}/axiom.input
@ (cd ${OUT} ; \
    for i in *.rec ;do \
        if test ! -f 'basename $$i .rec'.out ;then \
            echo aging ${OUT}/'basename $$i .rec'.out ; \
            ${TOUCH} 0101010189 'basename $$i .rec'.out ;fi ;done)
@ (cd ${OUT} ; ${MAKE} -f Makefile 'echo *.out' )
# @ (cd ${OUT} ; maildiff )
@ echo done

announce:
@ echo =====
@ echo src/input BUILDING INPUT FILES
@ echo =====

.SUFFIXES: .input .rec

all:    ${OUTS}
@ echo si09 done with ${OUTS}

.input.rec:
@ echo si10 creating 'pwd'/'$*.rec
@ axiom -rm $*.input

and still further stanzas

.SUFFIXES: .rec .out

```

```

all: ${OUTS}
@ echo si11 obj done with ${OUTS}

.rec.out:
@ echo si12 running rec file $* from directory 'pwd'
@ axiom -rv $*.rec

```

3 The regression testing Makefile

This Makefile will be notangled into the int/input subdirectory. It will run regression tests over all of the input files. This will catch things we break but won't catch wrong results that were wrong in the past. Every input file that gets regression tested is assumed to have been hand-verified before it was added to the list.

— regression tests —

```

.SUFFIXES: .input .output

DAASE=${MNT}/${SYS}
TESTSYS=${OBJ}/${SYS}/bin/interpsys

SKIP= as-eg1.output as-eg2.output \
      as-eg3.output as-eg4.output as-eg5.output as-eg6.output \
      bern.output bernpoly.output \
      c02aff.output \
      c02agf.output c05adf.output c05nbf.output c05pbf.output \
      c06eaf.output c06ebf.output c06ecf.output c06ekf.output \
      c06fpf.output c06fqf.output c06frf.output c06fuf.output \
      c06gbf.output c06gcf.output c06gqf.output c06gsf.output \
      cdraw.output color.output cone.output \
      coordsys.output \
      cycloid2.output cycloid3.output cycloid.output \
      d01ajf.output d01akf.output d01alf.output d01amf.output \
      d01anf.output d01apf.output d01aqf.output d01asf.output \
      d01bbf.output d01fcf.output d01gaf.output d01gbf.output \
      d02bbf.output d02bhf.output d02cjf.output d02ejf.output \
      d02gaf.output d02gbf.output d02kef.output d02raf.output \
      d03edf.output d03eef.output d03faf.output damped.output \
      de2re.output defs.output \
      draw2dsf.output drawalg.output drawcfn.output drawcfun.output \
      drawcurv.output drawcx.output drawex.output draw.output \
      drawpoly.output drawx.output dropt.output e01baf.output \
      e01bef.output e01bff.output e01bgf.output e01bhf.output \
      e01daf.output e01saf.output e01sbf.output e01sef.output \

```

e01sff.output	e02adf.output	e02aef.output	e02agf.output	\
e02ahf.output	e02ajf.output	e02akf.output	e02baf.output	\
e02bbf.output	e02bcf.output	e02bdf.output	e02bef.output	\
e02daf.output	e02dcf.output	e02ddf.output	e02def.output	\
e02dff.output	e02gaf.output	e02zaf.output	e04dgf.output	\
e04fdf.output	e04gcf.output	e04jaf.output	e04mbf.output	\
e04naf.output	e04ucf.output	e04ycf.output	egg.output	\
explo2d.output	explo3d.output	\		
f01brf.output	f01bsf.output	f01maf.output	\	
f01mcf.output	f01qcf.output	f01qdf.output	f01qef.output	\
f01rcf.output	f01rdf.output	f01ref.output	f02aaf.output	\
f02abf.output	f02adf.output	f02aef.output	f02aff.output	\
f02agf.output	f02ajf.output	f02akf.output	f02awf.output	\
f02axf.output	f02bbf.output	f02bjf.output	f02fjf.output	\
f02wef.output	f02xef.output	f04adf.output	f04arf.output	\
f04asf.output	f04atf.output	f04axf.output	f04faf.output	\
f04jgf.output	f04maf.output	f04mbf.output	f04mcf.output	\
f04qaf.output	f07adf.output	f07aef.output	f07fdf.output	\
f07fef.output	folium.output	gary1.output	gnarly1.output	\
graphics.output	grdef.output	helix.output	\	
images1a.output	images1.output	images2a.output	images2.output	\
images3a.output	images3.output	images5a.output	images5.output	\
images6a.output	images6.output	images7a.output	images7.output	\
images8a.output	images8.output	inputform.output	\	
knot.output	knownbugs.output	\		
liss1.output	liss2.output	lump.output	matrox.output	\
mountain.output	mult2d.output	mult3d.output	multknot.output	\
ntube.output	palette.output	parpcurv.output	parscurv.output	\
parsurf.output	pinch.output	plotfile.output	\	
plotlist.output	pollevel.output	ribbon.output	\	
ribbons.output	ribbonsnew.output	rk4draw.output	\	
s01eaf.output	s13aaf.output	s13acf.output	s13adf.output	\
s14aaf.output	s14abf.output	s14baf.output	s15adf.output	\
s15aef.output	s17acf.output	s17adf.output	s17aef.output	\
s17aff.output	s17agf.output	s17ahf.output	s17ajf.output	\
s17akf.output	s17dcf.output	s17def.output	s17dgf.output	\
s17dhf.output	s17dlf.output	s18acf.output	s18adf.output	\
s18aef.output	s18aff.output	s18dcf.output	s18def.output	\
s19aaf.output	s19abf.output	s19acf.output	s19adf.output	\
s20acf.output	s20adf.output	s21baf.output	s21bbf.output	\
s21bcf.output	s21bdf.output	saddle.output	\	
sininv.output	sinsin2.output	sinsin.output	spiral.output	\
tetra.output	tknot.output	tschirn.output	typo.output	\
vectors.output	wester.output	wiggle.output	zimmbron.output	

Error ASEC is invalid as a function.
ASEC=errortrap.output

Error: The function WRAPPED is undefined.
WRAPPED=loop.output

```

# Error: Value stack overflow.
VALUESTACK=tutchap67.output

# Broken at |STAGG-;ELT;AIS;5|. Type :H for Help.
STAGG=reductio.output

# Broken at |GSERIES;INTEGRATE;2$;6|. Type :H for Help.
GSERIES=fixed.output

# never finishes
INFINITELOOP=lextripk.output

OUTS= ffrac.output      \
      huang.output      \
      intlf.output      \
      lib.output        \
      marchbench.output \
      synonym2.output   \
      synonym.output    \
      tsetcatbutcher.output tsetcatchemical.output \
      tree.output       \
      tutchap2.output   tutchap3.output   tutchap4.output \
      up.output         \
      vector.output     viewdef.output    \
      wutset.output     \
      xpoly.output      xpr.output        \
      zdsolve.output    zlindep.output

REGRESSTESTS= ackermann.regress \
               algaggr.regress  algbrbf.regress  algfacob.regress  alist.regress  \
               allfact.regress  antoine.regress  \
               arith.regress     array1.regress  array2.regress  \
               arrows.regress    asinatan.regress  asinhatanh.regress \
               assign.regress    atansqrt.regress  \
               asec.regress      bbtrees.regress  bessellk.regress \
               binary.regress    bini.regress     biquat.regress  \
               bop.regress       bstree.regress   bouquet.regress  \
               branchcut.regress \
               bug100.regress     bug101.regress  \
               bug103.regress     bug10069.regress \
               bugs.regress       bug10312.regress  bug6357.regress  bug9057.regress \
               cachedf.regress    calcprob.regress \
               calculus2.regress  calculus.regress  cardinal.regress  card.regress  \
               carten.regress     cclass.regress   char.regress      ch.regress    \
               charlwood.regress  cherry.regress   \
               chtheorem.regress  classtalk.regress  clements.regress \
               clifford.regress    cliff.regress     cmds.regress      \
               coercels.regress    collect.regress   cohen.regress     \
               complex.regress     complexfactor.regress  conformal.regress \

```



```

constant.regress  contfrac.regress  confrc.regress \
curl.regress      curry.regress   cwmmt.regress \
cycles1.regress   cycles.regress   cyfactor.regress \
danzwill.regress  danzwill2.regress  davenport.regress \
davis.regress \
decimal.regress   defintef.regress  defintrf.regress \
derham.regress    derivefail.regress \
dfloat.regress    dftrig.regress \
dhmatrix.regress \
dhtri.regress     directproduct.regress  distexpr.regress \
divisor.regress   donsimpleregress \
dmp.regress       dop.regress      dpol.regress \
e1.regress        ei.regress \
easter.regress    efi.regress \
eigen.regress     elemfun.regress  elemnum.regress  elfuts.regress \
elt.regress       en.regress \
eq.regress        eqtbl.regress   equation2.regress \
equation.regress  erf.regress \
evalex.regress    eval.regress     exdiff.regress \
exampleagcode.regress \
exint.regress     exit.regress      exlap.regress     exlimit.regress \
exp.regress       exptest.regress \
expexpan.regress  explim.regress    expr1.regress     expode.regress \
expr.regress      exseries.regress  exsum.regress     exprpoly.regress \
farray.regress    ffdemo.regress    fferr.regress    ffieldbug.regress \
ffx72.regress \
fib.regress       finitegraph.regress \
file.regress      fixed.regress \
float1.regress    float2.regress \
float.regress     fname1.regress    fname.regress     fnla.regress \
fns.regress       fparfrac.regress  fparfrc.regress \
frame.regress     fr1.regress \
fr2.regress       frac.regress      fr.regress        free.regress \
function.regress  functioncode.regress \
galois.regress    gamma.regress \
gbf.regress       genups.regress    gonshor.regress   grpthry.regress \
gstbl.regress     guess.regress \
heap.regress      heat.regress      help.regress \
herm.regress      heugcd.regress \
hexadec.regress   hyperbolicrules.regress \
hyperell.regress  ico.regress       ideal.regress \
ifact.regress     ifthenelse.regress  i2e.regress \
infprod.regress   intaf.regress     intbypart.regress \
inputform.regress  intdeq.regress \
intef2.regress    intef.regress     intg0.regress     intheory.regress \
intmix2.regress   intmix.regress    int.regress       intrf.regress \
iprntpk.regress \
ipftest.regress   is.regress        isprime.regress \
kernel.regress    knot2.regress     kovacic.regress   kuipers.regress \
laplace.regress   leg.regress       limit.regress     linalg.regress \

```

lindep.regress	liska.regress	list.regress	liu.regress \
lode.regress	lodesys.regress	lodo1.regress \	
lodo2.regress	lodo3.regress	lodof.regress	lodo.regress \
log.regress \			
lpoly.regress	lupfact.regress	lword.regress	macbug.regress \
machinearithmic.regress \			
macros.regress	magma.regress	manuel.regress	mapleok.regress \
matbug.regress	mathml.regress \		
matrix1.regress	matrix22.regress	matrix.regress \	
mfinfact.regress	mkfunc.regress	monitortest.regress \	
mpoly.regress	mset2.regress \		
mset.regress	multfact.regress	multiple.regress	ndftip.regress \
negfloats.regress	nepip.regress	newlodo.regress	newton.regress \
newtonlisp.regress	numericgamma.regress \		
nlobe.regress	nonlinhomodiffeq.regress \		
none.regress	noonburg.regress	noptip.regress \	
nqip.regress	nsfip.regress	numbers.regress	octonion.regress \
oct.regress	ode.regress	odpol.regress	op1.regress \
opalg.regress	operator.regress	op.regress	ovar.regress \
overload.regress	padic.regress	paff.regress	paffexample.regress \
parabola.regress	pascal1.regress	pascal.regress \	
patch51.regress \			
patmatch.regress	pat.regress	perman.regress	perm.regress \
pfaffian.regress	pfr1.regress	pfr.regress	pgcd.regress \
pmint.regress	polygamma.regress \		
poly1.regress	polycoer.regress	poly.regress	psgenfcn.regress \
quat1.regress	quat.regress	r20abugs.regress	r20bugs.regress \
r21bugsbig.regress	r21bugs.regress	radff.regress	radix.regress \
realclos.regress	reclos.regress	reclos2.regress	regset.regress \
repa6.regress	risch.regress \		
robidoux.regress \			
roman.regress	romanpolynomials.regress \		
roots.regress	rsa.regress \		
ruleset.regress	rules.regress \		
rubey.regress	sae.regress	segletes.regress \	
spline.regress \			
scherk.regress	scope.regress	seccsc.regress \	
segbind.regress	seg.regress \		
series2.regress	series.regress	sertsolve.regress	set.regress \
setcmd.regress	shannonmatrix.regress	simplify.regress \	
sincos.regress	sinhcosh.regress \		
sincosex.regress	sint.regress	skew.regress	slowint.regress \
solveperf.regress \			
solvetra.regress	space3.regress	sqmatrix.regress	sqrt3.regress \
sregset.regress \			
stbl.regress	stream2.regress	stream.regress	streams.regress \
string.regress	strtbl.regress	subset.regress	summation.regress \
symbol.regress	t111293.regress	table.regress	tancot.regress \
tanhcoth.regress	tanatan.regress	tbagg.regress	telford.regress \
test.regress	testpackage.regress \		

```

testprob.regress  textfile.regress  torus.regress    tuplebug.regress \
tpiezas001.regress \
tpiezas002.regress tree.regress    trigtests.regress \
triglim.regress   tsetcatvermeer.regress    tutchap1.regress \
typetower.regress void.regress    uniseg.regress \
unittest1.regress unittest2.regress unittest3.regress unittest4.regress \
unit-macro.regress wangeez.regress \
zimmbron.regress  zimmer.regress

```

— regression tests —

```

CATSTESTS= \
kamke0.regress  kamke1.regress  kamke2.regress  kamke3.regress \
kamke4.regress  kamke5.regress  kamke6.regress  kamke7.regress \
schaum1.regress schaum2.regress schaum3.regress  schaum4.regress \
schaum5.regress schaum6.regress schaum7.regress  schaum8.regress \
schaum9.regress schaum10.regress schaum11.regress schaum12.regress \
schaum13.regress schaum14.regress schaum15.regress schaum16.regress \
schaum17.regress schaum18.regress schaum19.regress schaum20.regress \
schaum21.regress schaum22.regress schaum23.regress schaum24.regress \
schaum25.regress schaum26.regress schaum27.regress schaum28.regress \
schaum29.regress schaum30.regress schaum31.regress schaum32.regress \
schaum33.regress schaum34.regress

```

These long-running tests have been split into a different group so we can run them in parallel.

— regression tests —

```

NEWRICHTESTSa= rich1a.regress rich1b.regress rich2.regress \
rich3a.regress rich3b.regress rich3c.regress \
rich3d.regress rich3e.regress rich3f.regress \
rich3g.regress rich3h.regress rich3i.regress \
rich3j.regress rich3k.regress rich3l.regress \
rich3m.regress rich3n.regress rich3o.regress \
rich3p.regress rich3q.regress rich3r.regress \
rich3s.regress rich3t.regress rich4a.regress \
rich4b.regress rich4c.regress rich4d.regress \
rich4e.regress rich4f.regress rich4g.regress \
rich4h.regress rich4i.regress rich4j.regress \
rich5.regress  rich6a.regress rich6b.regress \
rich6c.regress rich6d.regress rich6e.regress \
rich7.regress  rich8a.regress rich8b.regress \
rich8c.regress rich8d.regress rich9a.regress \
rich9b.regress rich10a.regress rich10b.regress \
rich10c.regress rich10d.regress rich10e.regress \
rich10f.regress rich11a.regress rich11b.regress \
rich11c.regress rich11d.regress rich11e.regress \

```

```

richder1a.regress richder1b.regress richder2.regress \
richder3a.regress richder3b.regress richder3c.regress \
richder3d.regress richder3e.regress richder3f.regress \
richder3g.regress richder3h.regress richder3i.regress \
richder3j.regress richder3k.regress richder3l.regress \
richder3m.regress richder3n.regress richder3o.regress \
richder3p.regress richder3q.regress richder3r.regress \
richder3s.regress richder3t.regress richder4a.regress \
richder4b.regress richder4c.regress richder4d.regress \
richder4e.regress richder4f.regress richder5.regress \
richder6a.regress richder6b.regress richder6c.regress \
richder6d.regress richder6e.regress

```

```

NEWRICHTESTS = rich12a.regress rich12b.regress rich12c.regress \
rich12d.regress rich12e.regress rich12f.regress \
richder12a.regress richder12b.regress richder12c.regress \
richder12d.regress richder12e.regress richder12f.regress

```

```

RICHTESTS= \
richalgebraic000-099.regress \
richalgebraic100-199.regress \
richalgebraic200-299.regress \
richalgebraic300-399.regress \
richalgebraic400-461.regress \
richerror000-078.regress \
richexponential.regress \
richhyper000-099.regress \
richhyper100-199.regress \
richhyper200-299.regress \
richhyper300-399.regress \
richhyper400-499.regress \
richhyper500-599.regress \
richhyper600-699.regress \
richhyper700-799.regress \
richhyper800-899.regress \
richhyper900-999.regress \
richhyper1000-1098.regress \
richinvhyper000-099.regress \
richinvhyper100-199.regress \
richintfunc000-032.regress \
richinvtrig000-092.regress \
richlog000-099.regress \
richlog100-199.regress \
richlog200-299.regress \
richlog300-391.regress \
richrational.regress \
richspecfunc000-022.regress \
richtrig000-099.regress \
richtrig100-199.regress \

```

```

    richtrig200-299.regress \
    richtrig300-399.regress \
    richtrig400-499.regress \
    richtrig500-599.regress \
    richtrig600-699.regress \
    richtrig700-799.regress \
    richtrig800-899.regress \
    richtrig900-920.regress

IN=      ${SRC}/input
MID=    ${INT}/input
TMPFN:=$(shell echo $$RANDOM)

LISPTANGLE=${OBJ}/${SYS}/bin/lisp

all: alltests

algebratests: ${OUTS}
@ echo si13 starting algebra regression testing
@ (cd ${MID} ; \
    ${BOOKS}/tanglec ${SRC}/algebra/Makefile.pamphlet algebra.regress \
    >Makefile.algebra ; \
    ${MAKE} -f Makefile.algebra )
@ echo si14 finished ${INT}/input

newrichtests: ${NEWRICHTESTS} ${OUTS}
@ echo =====
@ echo src/input RUNNING NEW RICH TESTS
@ echo =====

richtests: ${RICHTESTS} ${OUTS}
@ echo =====
@ echo src/input RUNNING RICH TESTS
@ echo =====

catstests: ${CATSTESTS} ${OUTS}
@ echo =====
@ echo src/input RUNNING CATS TESTS
@ echo =====

regresstests: ${REGRESSTESTS} ${OUTS}
@ echo =====
@ echo src/input RUNNING REGRESSION TESTS
@ echo =====

alltests: regresstests catstests newrichtests richtests algebratests ${OUTS}
@ echo =====
@ echo src/input RUNNING ALL TESTS
@ echo =====

```

```

notests:
@ echo =====
@ echo src/input RUNNING NO TESTS
@ echo =====

%.input: ${IN}/%.input.pamphlet
@ echo si15 making ${MID}/${*.input} from ${IN}/${*.input.pamphlet}
@ (cd ${MID} ; \
    echo '(tangle "${IN}/${*.input.pamphlet}" "*" "${*.input}")' | \
    ${LISPTANGLE} 1>/dev/null 2>/dev/null)

```

The curious use of `egrep` in the pipeline is to remove the spurious differences caused by the Version and Timestamp lines in the standard Axiom banner. These cause mismatches in otherwise identical output.

The input files are not removed because this parallel builds create race conditions.

— regression tests —

```

%.output: %.input
@ echo si16 running test file $* using $*tpd.input
@ echo ')set message test on' > $*tpd.input
@ echo ')set message auto off' >> $*tpd.input
@ echo ')read $*' >> $*tpd.input
@ echo ')lisp (bye)' >> $*tpd.input
@ if [ -z "${NOISE}" ] ; then \
    echo ")read $*tpd.input" | ${TESTSYS} \
        | egrep -v '(Timestamp|Version)' | tee $*.output ; \
else \
    echo ")read $*tpd.input" | ${TESTSYS} \
        | egrep -v '(Timestamp|Version)' > $*.output ; \
fi
# @ rm $*.input

```

A regression test file will run the input file. Each input file specifies that it creates an output file using the `)spool` command. A regression file contains the expected output in specially formatted comments. These output files are run thru the `regress` function which compares the actual results against the expected results.

We need to copy the original pamphlet file to the MID directory because in at least one case (`cwmmmt.regress`) we have `spad` test code in the input file that needs to be extracted and compiled. This is done by commands within the input file itself and uses the built-in `gclweb` function (see `src/interp/gclweb.lisp`)

— regression tests —

```

%.regress: %.input
@ echo si17 regression testing $*
@ (cd ${MID} ; \
    rm -f $*.output ; \

```

```

if [ -z "${NOISE}" ] ; then \
    echo ')read $*.input' | ${TESTSYS} ; \
else \
    echo ')read $*.input' | ${TESTSYS} >${TMP}/trace ; \
fi ; \
if [ -z "${NOISE}" ] ; then \
    echo ')lisp (regress "$*.output")' | ${TESTSYS} \
    | egrep -v '(Timestamp|Version)' | tee $*.regress ; \
else \
    echo ')lisp (regress "$*.output")' | ${TESTSYS} \
    | egrep -v '(Timestamp|Version)' > $*.regress ; \
fi ; \
fgrep "regression result" $*.regress )

```

4 The Makefile

This Makefile will be notangled into the src/input subdirectory.

___ * ___

```

IN=${SRC}/input
MID=${INT}/input
OUT=${MNT}/${SYS}/input
DOC=${MNT}/${SYS}/doc/src/input

```

```

ASFILES=${OUT}/aseg6.as  ${OUT}/aseg7.as  ${OUT}/ecfact.as \
    ${OUT}/hilbert.as  ${OUT}/matops.as  ${OUT}/pdecomp0.as \
    ${OUT}/romnum.as

```

```

NAGLIB=${OUT}/c02aff.input  ${OUT}/c02agf.input  ${OUT}/c05adf.input \
    ${OUT}/c05nbf.input  ${OUT}/c05pbf.input  ${OUT}/c06eaf.input \
    ${OUT}/c06ebf.input  ${OUT}/c06ecf.input  ${OUT}/c06ekf.input \
    ${OUT}/c06fpf.input  ${OUT}/c06fqf.input  ${OUT}/c06frf.input \
    ${OUT}/c06fuf.input  ${OUT}/c06gbf.input  ${OUT}/c06gcf.input \
    ${OUT}/c06gqf.input  ${OUT}/c06gsf.input  \
    ${OUT}/d01ajf.input  ${OUT}/d01akf.input  ${OUT}/d01alf.input \
    ${OUT}/d01amf.input  ${OUT}/d01anf.input  ${OUT}/d01apf.input \
    ${OUT}/d01aqf.input  ${OUT}/d01asf.input  ${OUT}/d01bbf.input \
    ${OUT}/d01fcf.input  ${OUT}/d01gaf.input  ${OUT}/d01gbf.input \
    ${OUT}/d02bbf.input  ${OUT}/d02bhf.input  ${OUT}/d02cjf.input \
    ${OUT}/d02ejf.input  ${OUT}/d02gaf.input  ${OUT}/d02gbf.input \
    ${OUT}/d02kef.input  ${OUT}/d02raf.input  ${OUT}/d03edf.input \
    ${OUT}/d03eef.input  ${OUT}/d03faf.input  \
    ${OUT}/e01baf.input  ${OUT}/e01bef.input  ${OUT}/e01bff.input \
    ${OUT}/e01bgf.input  ${OUT}/e01bhf.input  ${OUT}/e01daf.input \

```

$\{\text{OUT}\}/\text{e01saf.input}$	$\{\text{OUT}\}/\text{e01sbf.input}$	$\{\text{OUT}\}/\text{e01sef.input} \setminus$
$\{\text{OUT}\}/\text{e01sff.input}$	$\{\text{OUT}\}/\text{e02adf.input}$	$\{\text{OUT}\}/\text{e02aef.input} \setminus$
$\{\text{OUT}\}/\text{e02agf.input}$	$\{\text{OUT}\}/\text{e02ahf.input}$	$\{\text{OUT}\}/\text{e02ajf.input} \setminus$
$\{\text{OUT}\}/\text{e02akf.input}$	$\{\text{OUT}\}/\text{e02baf.input}$	$\{\text{OUT}\}/\text{e02bbf.input} \setminus$
$\{\text{OUT}\}/\text{e02bcf.input}$	$\{\text{OUT}\}/\text{e02bdf.input}$	$\{\text{OUT}\}/\text{e02bef.input} \setminus$
$\{\text{OUT}\}/\text{e02daf.input}$	$\{\text{OUT}\}/\text{e02dcf.input}$	$\{\text{OUT}\}/\text{e02ddf.input} \setminus$
$\{\text{OUT}\}/\text{e02def.input}$	$\{\text{OUT}\}/\text{e02dff.input}$	$\{\text{OUT}\}/\text{e02gaf.input} \setminus$
$\{\text{OUT}\}/\text{e02zaf.input}$	$\{\text{OUT}\}/\text{e04dgm.input}$	$\{\text{OUT}\}/\text{e04fdf.input} \setminus$
$\{\text{OUT}\}/\text{e04gcf.input}$	$\{\text{OUT}\}/\text{e04jaf.input}$	$\{\text{OUT}\}/\text{e04mbf.input} \setminus$
$\{\text{OUT}\}/\text{e04naf.input}$	$\{\text{OUT}\}/\text{e04ucf.input}$	$\{\text{OUT}\}/\text{e04ycf.input} \setminus$
$\{\text{OUT}\}/\text{f01brf.input}$	$\{\text{OUT}\}/\text{f01bsf.input}$	$\{\text{OUT}\}/\text{f01maf.input} \setminus$
$\{\text{OUT}\}/\text{f01mcf.input}$	$\{\text{OUT}\}/\text{f01qcf.input}$	$\{\text{OUT}\}/\text{f01qdf.input} \setminus$
$\{\text{OUT}\}/\text{f01qef.input}$	$\{\text{OUT}\}/\text{f01rcf.input}$	$\{\text{OUT}\}/\text{f01rdf.input} \setminus$
$\{\text{OUT}\}/\text{f01ref.input}$	$\{\text{OUT}\}/\text{f02aaf.input}$	$\{\text{OUT}\}/\text{f02abf.input} \setminus$
$\{\text{OUT}\}/\text{f02adf.input}$	$\{\text{OUT}\}/\text{f02aef.input}$	$\{\text{OUT}\}/\text{f02aff.input} \setminus$
$\{\text{OUT}\}/\text{f02agf.input}$	$\{\text{OUT}\}/\text{f02ajf.input}$	$\{\text{OUT}\}/\text{f02akf.input} \setminus$
$\{\text{OUT}\}/\text{f02awf.input}$	$\{\text{OUT}\}/\text{f02axf.input}$	$\{\text{OUT}\}/\text{f02bbf.input} \setminus$
$\{\text{OUT}\}/\text{f02bjf.input}$	$\{\text{OUT}\}/\text{f02fjf.input}$	$\{\text{OUT}\}/\text{f02wef.input} \setminus$
$\{\text{OUT}\}/\text{f02xef.input}$	$\{\text{OUT}\}/\text{f04adf.input}$	$\{\text{OUT}\}/\text{f04arf.input} \setminus$
$\{\text{OUT}\}/\text{f04asf.input}$	$\{\text{OUT}\}/\text{f04atf.input}$	$\{\text{OUT}\}/\text{f04axf.input} \setminus$
$\{\text{OUT}\}/\text{f04faf.input}$	$\{\text{OUT}\}/\text{f04jgf.input}$	$\{\text{OUT}\}/\text{f04maf.input} \setminus$
$\{\text{OUT}\}/\text{f04mbf.input}$	$\{\text{OUT}\}/\text{f04mcf.input}$	$\{\text{OUT}\}/\text{f04qaf.input} \setminus$
$\{\text{OUT}\}/\text{f07adf.input}$	$\{\text{OUT}\}/\text{f07aef.input}$	$\{\text{OUT}\}/\text{f07fdf.input} \setminus$
$\{\text{OUT}\}/\text{f07fef.input}$	\setminus	
$\{\text{OUT}\}/\text{s01eaf.input}$	$\{\text{OUT}\}/\text{s13aaf.input}$	$\{\text{OUT}\}/\text{s13acf.input} \setminus$
$\{\text{OUT}\}/\text{s13adf.input}$	$\{\text{OUT}\}/\text{s14aaf.input}$	$\{\text{OUT}\}/\text{s14abf.input} \setminus$
$\{\text{OUT}\}/\text{s14baf.input}$	$\{\text{OUT}\}/\text{s15adf.input}$	$\{\text{OUT}\}/\text{s15aef.input} \setminus$
$\{\text{OUT}\}/\text{s17acf.input}$	$\{\text{OUT}\}/\text{s17adf.input}$	$\{\text{OUT}\}/\text{s17aef.input} \setminus$
$\{\text{OUT}\}/\text{s17aff.input}$	$\{\text{OUT}\}/\text{s17agf.input}$	$\{\text{OUT}\}/\text{s17ahf.input} \setminus$
$\{\text{OUT}\}/\text{s17ajf.input}$	$\{\text{OUT}\}/\text{s17akf.input}$	$\{\text{OUT}\}/\text{s17dcf.input} \setminus$
$\{\text{OUT}\}/\text{s17def.input}$	$\{\text{OUT}\}/\text{s17dgm.input}$	$\{\text{OUT}\}/\text{s17dhf.input} \setminus$
$\{\text{OUT}\}/\text{s17dlf.input}$	$\{\text{OUT}\}/\text{s18acf.input}$	$\{\text{OUT}\}/\text{s18adf.input} \setminus$
$\{\text{OUT}\}/\text{s18aef.input}$	$\{\text{OUT}\}/\text{s18aff.input}$	$\{\text{OUT}\}/\text{s18dcf.input} \setminus$
$\{\text{OUT}\}/\text{s18def.input}$	$\{\text{OUT}\}/\text{s19aaf.input}$	$\{\text{OUT}\}/\text{s19abf.input} \setminus$
$\{\text{OUT}\}/\text{s19acf.input}$	$\{\text{OUT}\}/\text{s19adf.input}$	$\{\text{OUT}\}/\text{s20acf.input} \setminus$
$\{\text{OUT}\}/\text{s20adf.input}$	$\{\text{OUT}\}/\text{s21baf.input}$	$\{\text{OUT}\}/\text{s21bbf.input} \setminus$
$\{\text{OUT}\}/\text{s21bcf.input}$	$\{\text{OUT}\}/\text{s21bdf.input}$	

FILES= $\{\text{OUT}\}/\text{ackermann.input} \setminus$
 $\{\text{OUT}\}/\text{algaggr.input}$ $\{\text{OUT}\}/\text{algbrbf.input}$ $\{\text{OUT}\}/\text{algfacob.input} \setminus$
 $\{\text{OUT}\}/\text{alist.input}$ $\{\text{OUT}\}/\text{allfact.input}$ $\{\text{OUT}\}/\text{antoine.input} \setminus$
 $\{\text{OUT}\}/\text{array1.input}$ $\{\text{OUT}\}/\text{array2.input}$ $\{\text{OUT}\}/\text{arrows.input} \setminus$
 $\{\text{OUT}\}/\text{asinatan.input}$ $\{\text{OUT}\}/\text{asinhatanh.input} \setminus$
 $\{\text{OUT}\}/\text{assign.input}$ $\{\text{OUT}\}/\text{atansqrt.input}$ $\{\text{OUT}\}/\text{axiom.input} \setminus$
 $\{\text{OUT}\}/\text{asec.input} \setminus$
 $\{\text{OUT}\}/\text{bbtree.input}$ $\{\text{OUT}\}/\text{besselk.input} \setminus$
 $\{\text{OUT}\}/\text{bern.input} \setminus$
 $\{\text{OUT}\}/\text{bernpoly.input}$ $\{\text{OUT}\}/\text{binary.input}$ $\{\text{OUT}\}/\text{bini.input} \setminus$
 $\{\text{OUT}\}/\text{biquat.input}$ $\{\text{OUT}\}/\text{bop.input} \setminus$
 $\{\text{OUT}\}/\text{bouquet.input}$ $\{\text{OUT}\}/\text{branchcut.input} \setminus$


```

${OUT}/bstree.input    ${OUT}/bug6357.input \
${OUT}/bug9057.input  ${OUT}/bug100.input    ${OUT}/bug101.input \
${OUT}/bug103.input \
${OUT}/bug10069.input ${OUT}/bug10312.input    ${OUT}/cachedf.input \
${OUT}/calcprob.input ${OUT}/calculus.input \
${OUT}/cardinal.input ${OUT}/card.input    ${OUT}/carten.input \
${OUT}/cclass.input   ${OUT}/cdraw.input    ${OUT}/char.input \
${OUT}/ch.input       ${OUT}/charlwood.input ${OUT}/cherry.input \
${OUT}/chtheorem.input ${OUT}/classtalk.input \
${OUT}/clifford.input  ${OUT}/clements.input \
${OUT}/clif.input      ${OUT}/cmds.input \
${OUT}/coercels.input  ${OUT}/collect.input    ${OUT}/color.input \
${OUT}/complex.input   ${OUT}/complexfactor.input ${OUT}/cohen.input \
${OUT}/cone.input       ${OUT}/conformal.input \
${OUT}/constant.input \
${OUT}/contfrac.input  ${OUT}/contfrc.input    ${OUT}/coordsys.input \
${OUT}/curl.input      ${OUT}/curry.input \
${OUT}/cycles.input    ${OUT}/cycles1.input    ${OUT}/cycloid.input \
${OUT}/cycloid2.input \
${OUT}/cycloid3.input  ${OUT}/cyfactor.input    ${OUT}/damped.input \
${OUT}/danzwill1.input ${OUT}/danzwill2.input    ${OUT}/davenport.input \
${OUT}/davis.input     ${OUT}/decimal.input    ${OUT}/defs.input \
${OUT}/defintef.input  ${OUT}/defintrf.input    ${OUT}/derham.input \
${OUT}/derivefail.input ${OUT}/de2re.input \
${OUT}/dfloat.input    ${OUT}/dftrig.input    ${OUT}/dhmatrix.input \
${OUT}/dhtri.input     ${OUT}/directproduct.input \
${OUT}/distexpr.input  ${OUT}/divisor.input    ${OUT}/donsimple.input \
${OUT}/dmp.input       ${OUT}/dop.input \
${OUT}/dpol.input      ${OUT}/draw2dsf.input \
${OUT}/drawalg.input   ${OUT}/drawcfm.input \
${OUT}/drawcfun.input  ${OUT}/drawcurv.input \
${OUT}/draw.input      ${OUT}/drawcx.input    ${OUT}/drawex.input \
${OUT}/drawpoly.input  ${OUT}/drawx.input    ${OUT}/e1.input \
${OUT}/ei.input        \
${OUT}/easter.input    ${OUT}/efi.input    ${OUT}/egg.input \
${OUT}/eigen.input \
${OUT}/elemfun.input   ${OUT}/elemnum.input    ${OUT}/elfuts.input \
${OUT}/elt.input       ${OUT}/en.input \
${OUT}/eq.input        ${OUT}/eqtbl.input    ${OUT}/equation.input \
${OUT}/errortrap.input \
${OUT}/eval.input      ${OUT}/exit.input    ${OUT}/exptest.input \
${OUT}/exp.input       ${OUT}/expexpan.input \
${OUT}/explim.input    ${OUT}/explot2d.input    ${OUT}/explot3d.input \
${OUT}/expr1.input     ${OUT}/exprpoly.input \
${OUT}/farray.input    ${OUT}/ffdemo.input \
${OUT}/fferr.input     ${OUT}/ffrac.input    ${OUT}/ffieldbug.input \
${OUT}/ffx72.input \
${OUT}/fib.input       ${OUT}/finitegraph.input \
${OUT}/fixed.input \
${OUT}/file.input      ${OUT}/float2.input \

```

<code>\${OUT}/float.input</code>	<code>\${OUT}/float1.input</code>	<code>\${OUT}/fname.input \</code>
<code>\${OUT}/fname1.input</code>	<code>\${OUT}/fnla.input</code>	<code>\${OUT}/folium.input \</code>
<code>\${OUT}/fparfrac.input</code>	<code>\</code>	
<code>\${OUT}/fparfrc.input</code>	<code>\${OUT}/fr2.input</code>	<code>\${OUT}/frac.input \</code>
<code>\${OUT}/fr.input</code>	<code>\${OUT}/frame.input \</code>	
<code>\${OUT}/fr1.input</code>	<code>\${OUT}/gary1.input \</code>	
<code>\${OUT}/gbf.input</code>	<code>\${OUT}/genups.input</code>	<code>\${OUT}/gnarly1.input \</code>
<code>\${OUT}/gonshor.input</code>	<code>\${OUT}/grdef.input \</code>	
<code>\${OUT}/gstbl.input</code>	<code>\${OUT}/guess.input \</code>	
<code>\${OUT}/heap.input</code>	<code>\${OUT}/heat.input</code>	<code>\${OUT}/helix.input \</code>
<code>\${OUT}/herm.input</code>	<code>\${OUT}/heugcd.input \</code>	
<code>\${OUT}/hexadec.input</code>	<code>\${OUT}/huang.input \</code>	
<code>\${OUT}/hyperbolicrules.input \</code>		
<code>\${OUT}/hyperell.input \</code>		
<code>\${OUT}/ico.input</code>	<code>\${OUT}/ideal.input</code>	<code>\${OUT}/ifact.input \</code>
<code>\${OUT}/ifthenelse.input</code>	<code>\${OUT}/i2e.input \</code>	
<code>\${OUT}/images1.input</code>	<code>\${OUT}/images1a.input</code>	<code>\${OUT}/images3a.input \</code>
<code>\${OUT}/images3.input</code>	<code>\${OUT}/images6.input</code>	<code>\${OUT}/images6a.input \</code>
<code>\${OUT}/images7.input</code>	<code>\${OUT}/images7a.input</code>	<code>\${OUT}/infprod.input \</code>
<code>\${OUT}/inputform.input</code>	<code>\${OUT}/intaf.input</code>	<code>\${OUT}/intbypart.input \</code>
<code>\${OUT}/intdeq.input</code>	<code>\${OUT}/intef.input \</code>	
<code>\${OUT}/intg0.input</code>	<code>\${OUT}/intheory.input</code>	<code>\${OUT}/int.input \</code>
<code>\${OUT}/intl1f.input</code>	<code>\${OUT}/intmix.input</code>	<code>\${OUT}/intrf.input \</code>
<code>\${OUT}/ipftest.input</code>	<code>\${OUT}/is.input</code>	<code>\${OUT}/isprime.input \</code>
<code>\${OUT}/kamke0.input</code>	<code>\${OUT}/kamke1.input \</code>	
<code>\${OUT}/kamke2.input</code>	<code>\${OUT}/kamke3.input</code>	<code>\${OUT}/kamke4.input \</code>
<code>\${OUT}/kamke5.input</code>	<code>\${OUT}/kamke6.input</code>	<code>\${OUT}/kamke7.input \</code>
<code>\${OUT}/kernel.input</code>	<code>\${OUT}/knot.input \</code>	
<code>\${OUT}/kovacic.input</code>	<code>\${OUT}/kuipers.input \</code>	
<code>\${OUT}/laplace.input</code>	<code>\${OUT}/leg.input \</code>	
<code>\${OUT}/lextripk.input</code>	<code>\${OUT}/lib.input</code>	<code>\${OUT}/limit.input \</code>
<code>\${OUT}/linalg.input \</code>		
<code>\${OUT}/lindep.input</code>	<code>\${OUT}/liska.input \</code>	
<code>\${OUT}/liss1.input</code>	<code>\${OUT}/liss2.input \</code>	
<code>\${OUT}/list.input</code>	<code>\${OUT}/liu.input \</code>	
<code>\${OUT}/lode.input</code>	<code>\${OUT}/lodesys.input \</code>	
<code>\${OUT}/lodo1.input</code>	<code>\${OUT}/lodo2.input</code>	<code>\${OUT}/lodof.input \</code>
<code>\${OUT}/lodo.input</code>	<code>\${OUT}/lodo3.input</code>	<code>\${OUT}/log.input \</code>
<code>\${OUT}/lpoly.input</code>	<code>\${OUT}/lump.input \</code>	
<code>\${OUT}/lupfact.input</code>	<code>\${OUT}/lword.input</code>	<code>\${OUT}/macbug.input \</code>
<code>\${OUT}/machinearithmic.input \</code>		
<code>\${OUT}/macros.input</code>	<code>\${OUT}/marcbench.input</code>	<code>\${OUT}/magma.input \</code>
<code>\${OUT}/manuel.input</code>	<code>\${OUT}/mapleok.input</code>	<code>\${OUT}/matbug.input \</code>
<code>\${OUT}/mathml.input \</code>		
<code>\${OUT}/matrix22.input</code>	<code>\${OUT}/matrix.input</code>	<code>\${OUT}/matrix1.input \</code>
<code>\${OUT}/mfinfact.input</code>	<code>\${OUT}/mkfunc.input</code>	<code>\${OUT}/monitortest.input \</code>
<code>\${OUT}/mountain.input \</code>		
<code>\${OUT}/mpoly.input</code>	<code>\${OUT}/mset.input</code>	<code>\${OUT}/mset2.input \</code>
<code>\${OUT}/multfact.input</code>	<code>\${OUT}/multknot.input</code>	<code>\${OUT}/mult3d.input \</code>
<code>\${OUT}/multiple.input \</code>		

```

${OUT}/ndftip.input  ${OUT}/newlodo.input \
${OUT}/negfloats.input \
${OUT}/nepip.input   ${OUT}/newton.input  ${OUT}/newtonlisp.input \
${OUT}/numericgamma.input ${OUT}/nonlinhomodiffeq.input \
${OUT}/nnode.input    ${OUT}/none.input    ${OUT}/noonburg.input \
${OUT}/noptip.input   ${OUT}/nqip.input    ${OUT}/nsfip.input \
${OUT}/ntube.input    ${OUT}/oct.input     ${OUT}/ode.input \
${OUT}/octonion.input ${OUT}/odpol.input \
${OUT}/opalg.input    ${OUT}/operator.input ${OUT}/op.input \
${OUT}/op1.input      ${OUT}/ovar.input    ${OUT}/overload.input \
${OUT}/padic.input    ${OUT}/paff.input    ${OUT}/paffexample.input \
${OUT}/palette.input \
${OUT}/parpcurv.input ${OUT}/parscurv.input  ${OUT}/parsurf.input \
${OUT}/pascal1.input \
${OUT}/pascal.input  \
${OUT}/patch51.input \
${OUT}/patmatch.input ${OUT}/perman.input \
${OUT}/perm.input     ${OUT}/pfaffian.input \
${OUT}/pfr.input      ${OUT}/pfr1.input    ${OUT}/pgcd.input \
${OUT}/pinch.input    ${OUT}/plotfile.input ${OUT}/pollevel.input \
${OUT}/pmint.input    ${OUT}/polygamma.input ${OUT}/polycoer.input \
${OUT}/poly1.input    ${OUT}/psgenfcn.input \
${OUT}/quat.input     ${OUT}/quat1.input   ${OUT}/ribbon.input \
${OUT}/ribbons.input  ${OUT}/ribbonsnew.input \
${OUT}/rich1a.input   ${OUT}/rich1b.input \
${OUT}/rich2.input    ${OUT}/rich3a.input   ${OUT}/rich3b.input \
${OUT}/rich3c.input   ${OUT}/rich3d.input   ${OUT}/rich3e.input \
${OUT}/rich3f.input   ${OUT}/rich3g.input   ${OUT}/rich3h.input \
${OUT}/rich3i.input   ${OUT}/rich3j.input   ${OUT}/rich3k.input \
${OUT}/rich3l.input   ${OUT}/rich3m.input   ${OUT}/rich3n.input \
${OUT}/rich3o.input   ${OUT}/rich3p.input   ${OUT}/rich3q.input \
${OUT}/rich3r.input   ${OUT}/rich3s.input   ${OUT}/rich3t.input \
${OUT}/rich4a.input   ${OUT}/rich4b.input   ${OUT}/rich4c.input \
${OUT}/rich4d.input   ${OUT}/rich4e.input   ${OUT}/rich4f.input \
${OUT}/rich4g.input   ${OUT}/rich4h.input   ${OUT}/rich4i.input \
${OUT}/rich4j.input   ${OUT}/rich5.input    ${OUT}/rich6a.input \
${OUT}/rich6b.input   ${OUT}/rich6c.input    ${OUT}/rich6d.input \
${OUT}/rich6e.input   \
${OUT}/rich7.input    ${OUT}/rich8a.input  ${OUT}/rich8b.input \
${OUT}/rich8c.input    ${OUT}/rich8d.input  ${OUT}/rich9a.input \
${OUT}/rich9b.input \
${OUT}/rich10a.input  ${OUT}/rich10b.input \
${OUT}/rich10c.input  ${OUT}/rich10d.input \
${OUT}/rich10e.input  ${OUT}/rich10f.input \
${OUT}/rich11a.input  ${OUT}/rich11b.input \
${OUT}/rich11c.input  ${OUT}/rich11d.input \
${OUT}/rich11e.input  \
${OUT}/rich12a.input  ${OUT}/rich12b.input \
${OUT}/rich12c.input  ${OUT}/rich12d.input \
${OUT}/rich12e.input  ${OUT}/rich12f.input \

```

```

${OUT}/richder1a.input ${OUT}/richder1b.input \
${OUT}/richder2.input ${OUT}/richder3a.input \
${OUT}/richder3b.input ${OUT}/richder3c.input \
${OUT}/richder3d.input ${OUT}/richder3e.input \
${OUT}/richder3f.input ${OUT}/richder3g.input \
${OUT}/richder3h.input ${OUT}/richder3i.input \
${OUT}/richder3j.input ${OUT}/richder3k.input \
${OUT}/richder3l.input ${OUT}/richder3m.input \
${OUT}/richder3n.input ${OUT}/richder3o.input \
${OUT}/richder3p.input ${OUT}/richder3q.input \
${OUT}/richder3r.input ${OUT}/richder3s.input \
${OUT}/richder3t.input \
${OUT}/richder4a.input ${OUT}/richder4b.input \
${OUT}/richder4c.input ${OUT}/richder4d.input \
${OUT}/richder4e.input ${OUT}/richder4f.input \
${OUT}/richder5.input \
${OUT}/richder6a.input ${OUT}/richder6b.input \
${OUT}/richder6c.input ${OUT}/richder6d.input \
${OUT}/richder6e.input \
${OUT}/richder12a.input ${OUT}/richder12b.input \
${OUT}/richder12c.input ${OUT}/richder12d.input \
${OUT}/richder12e.input ${OUT}/richder12f.input \
${OUT}/rk4draw.input \
${OUT}/r20abugs.input \
${OUT}/r20bugs.input ${OUT}/r21bugsbig.input \
${OUT}/r21bugs.input \
${OUT}/radff.input ${OUT}/radix.input ${OUT}/realclos.input \
${OUT}/reclos.input ${OUT}/reclos2.input ${OUT}/regset.input \
${OUT}/risch.input \
${OUT}/robidoux.input ${OUT}/roman.input ${OUT}/roots.input \
${OUT}/rsa.input \
${OUT}/ruleset.input ${OUT}/rules.input ${OUT}/rubey.input \
${OUT}/sae.input \
${OUT}/spline.input ${OUT}/segletes.input ${OUT}/schaum1.input \
${OUT}/schaum2.input ${OUT}/schaum3.input ${OUT}/schaum4.input \
${OUT}/schaum5.input ${OUT}/schaum6.input ${OUT}/schaum7.input \
${OUT}/schaum8.input ${OUT}/schaum9.input ${OUT}/schaum10.input \
${OUT}/schaum11.input ${OUT}/schaum12.input ${OUT}/schaum13.input \
${OUT}/schaum14.input ${OUT}/schaum15.input ${OUT}/schaum16.input \
${OUT}/schaum17.input ${OUT}/schaum18.input ${OUT}/schaum19.input \
${OUT}/schaum20.input ${OUT}/schaum21.input ${OUT}/schaum22.input \
${OUT}/schaum23.input ${OUT}/schaum24.input ${OUT}/schaum25.input \
${OUT}/schaum26.input ${OUT}/schaum27.input ${OUT}/schaum28.input \
${OUT}/schaum29.input ${OUT}/schaum30.input ${OUT}/schaum31.input \
${OUT}/schaum32.input ${OUT}/schaum33.input ${OUT}/schaum34.input \
${OUT}/saddle.input \
${OUT}/scherk.input ${OUT}/scope.input ${OUT}/seccsc.input \
${OUT}/segbind.input ${OUT}/seg.input ${OUT}/series2.input \
${OUT}/series.input ${OUT}/sersolve.input ${OUT}/set.input \
${OUT}/setcmd.input ${OUT}/shannonmatrix.input \

```

```

${OUT}/simplify.input \
${OUT}/sincos.input  ${OUT}/sinhcosh.input \
${OUT}/sincosex.input  ${OUT}/sininv.input  ${OUT}/sinsin.input \
${OUT}/sinsin2.input  ${OUT}/sint.input  ${OUT}/skew.input \
${OUT}/slowint.input  ${OUT}/solveperf.input \
${OUT}/solvetra.input  ${OUT}/space3.input \
${OUT}/spiral.input \
${OUT}/sqmatrix.input  ${OUT}/sqrt3.input \
${OUT}/sregset.input  ${OUT}/stbl.input \
${OUT}/stream2.input  ${OUT}/stream.input  ${OUT}/streams.input \
${OUT}/string.input  ${OUT}/strtbl.input  ${OUT}/summation.input \
${OUT}/symbol.input \
${OUT}/synonym.input  ${OUT}/t111293.input \
${OUT}/table.input  ${OUT}/tancot.input  ${OUT}/tanhcoth.input \
${OUT}/tanatan.input  ${OUT}/tbagg.input  ${OUT}/telford.input \
${OUT}/test.input  ${OUT}/testpackage.input \
${OUT}/testprob.input \
${OUT}/tetra.input  ${OUT}/textfile.input  ${OUT}/tknot.input \
${OUT}/tpiezas001.input \
${OUT}/tpiezas002.input \
${OUT}/tree.input  ${OUT}/trigtests.input \
${OUT}/triglim.input  ${OUT}/tschirn.input  ${OUT}/tsetcatbutcher.input \
${OUT}/tsetcatchemical.input  ${OUT}/tsetcatvermeer.input \
${OUT}/tuplebug.input \
${OUT}/tutchap1.input  ${OUT}/tutchap2.input  ${OUT}/tutchap3.input \
${OUT}/tutchap4.input  ${OUT}/tutchap67.input  ${OUT}/typetower.input \
${OUT}/typo.input \
${OUT}/uniseq.input  ${OUT}/up.input  ${OUT}/unittest1.input \
${OUT}/unittest2.input  ${OUT}/unittest3.input  ${OUT}/unittest4.input \
${OUT}/unit-macro.input \
${OUT}/vector.input  ${OUT}/vectors.input  ${OUT}/viewdef.input \
${OUT}/void.input  ${OUT}/wigggle.input \
${OUT}/wutset.input \
${OUT}/xpoly.input  ${OUT}/xpr.input  ${OUT}/wangeez.input \
${OUT}/zimmbron.input \
${OUT}/zdsolve.input  ${OUT}/zimmer.input  ${OUT}/zlindep.input

FILES2=${OUT}/arith.input  ${OUT}/bugs.input \
${OUT}/calculus2.input \
${OUT}/equation2.input  ${OUT}/erf.input \
${OUT}/evalex.input  ${OUT}/exampleagcode.input \
${OUT}/exdiff.input  ${OUT}/exint.input  ${OUT}/exlap.input \
${OUT}/exlimit.input \
${OUT}/expr.input  ${OUT}/exprode.input  ${OUT}/exseries.input \
${OUT}/exsum.input  ${OUT}/fns.input \
${OUT}/function.input  ${OUT}/free.input \
${OUT}/galois.input  ${OUT}/gamma.input \
${OUT}/grpthry.input \
${OUT}/help.input  ${OUT}/intef2.input \
${OUT}/intmix2.input  ${OUT}/knot2.input  ${OUT}/linalg.input \

```

```

    ${OUT}/loop.input \
    ${OUT}/numbers.input \
    ${OUT}/parabola.input ${OUT}/pat.input \
    ${OUT}/poly.input      ${OUT}/reductio.input  ${OUT}/repa6.input \
    ${OUT}/spadprof.input \
    ${OUT}/synonym2.input ${OUT}/torus.input

RICHINPUT= \
    ${OUT}/richalgebraic000-099.input \
    ${OUT}/richalgebraic100-199.input \
    ${OUT}/richalgebraic200-299.input \
    ${OUT}/richalgebraic300-399.input \
    ${OUT}/richalgebraic400-461.input \
    ${OUT}/richerror000-078.input \
    ${OUT}/richexponential.input \
    ${OUT}/richhyper000-099.input \
    ${OUT}/richhyper100-199.input \
    ${OUT}/richhyper200-299.input \
    ${OUT}/richhyper300-399.input \
    ${OUT}/richhyper400-499.input \
    ${OUT}/richhyper500-599.input \
    ${OUT}/richhyper600-699.input \
    ${OUT}/richhyper700-799.input \
    ${OUT}/richhyper800-899.input \
    ${OUT}/richhyper900-999.input \
    ${OUT}/richhyper1000-1098.input \
    ${OUT}/richintfunc000-032.input \
    ${OUT}/richinvhyper000-099.input \
    ${OUT}/richinvhyper100-199.input \
    ${OUT}/richinvtrig000-092.input \
    ${OUT}/richlog000-099.input \
    ${OUT}/richlog100-199.input \
    ${OUT}/richlog200-299.input \
    ${OUT}/richlog300-391.input \
    ${OUT}/richrational.input \
    ${OUT}/richspecfunc000-022.input \
    ${OUT}/richtrig000-099.input \
    ${OUT}/richtrig100-199.input \
    ${OUT}/richtrig200-299.input \
    ${OUT}/richtrig300-399.input \
    ${OUT}/richtrig400-499.input \
    ${OUT}/richtrig500-599.input \
    ${OUT}/richtrig600-699.input \
    ${OUT}/richtrig700-799.input \
    ${OUT}/richtrig800-899.input \
    ${OUT}/richtrig900-920.input

BROKEN=${OUT}/as-eg1.input  ${OUT}/as-eg2.input  ${OUT}/as-eg3.input \
    ${OUT}/as-eg4.input  ${OUT}/as-eg5.input  ${OUT}/as-eg6.input

```

```

# This viewport has already been closed!
VIEWPORT=${OUT}/graphics.input

# Error: Value stack overflow.
VALUESTACK=${OUT}/images2a.input ${OUT}/images2.input ${OUT}/images5a.input \
        ${OUT}/images5.input ${OUT}/images8a.input ${OUT}/images8.input \
        ${OUT}/mult2d.input ${OUT}/plotlist.input

# documented test cases
DOCFILES= \
    ${DOC}/ackermann.input.dvi \
    ${DOC}/algaggr.input.dvi      ${DOC}/algbrbf.input.dvi      \
    ${DOC}/algfacob.input.dvi    ${DOC}/alist.input.dvi        \
    ${DOC}/allfact.input.dvi     ${DOC}/antoine.input.dvi   \
    ${DOC}/arith.input.dvi       ${DOC}/array1.input.dvi        \
    ${DOC}/array2.input.dvi      ${DOC}/arrows.input.dvi      \
    ${DOC}/as-eg1.input.dvi      ${DOC}/as-eg2.input.dvi   \
    ${DOC}/as-eg3.input.dvi      ${DOC}/as-eg4.input.dvi   \
    ${DOC}/as-eg5.input.dvi      ${DOC}/aseg6.as.dvi         \
    ${DOC}/as-eg6.input.dvi      ${DOC}/aseg7.as.dvi         \
    ${DOC}/asec.input.dvi        ${DOC}/asinatan.input.dvi     \
    ${DOC}/asinhatanh.input.dvi \
    ${DOC}/assign.input.dvi      ${DOC}/atansqrt.input.dvi     \
    ${DOC}/axiom.input.dvi       \
    ${DOC}/bbtree.input.dvi      ${DOC}/besselk.input.dvi      \
    ${DOC}/bern.input.dvi        \
    ${DOC}/bernpoly.input.dvi    ${DOC}/binary.input.dvi      \
    ${DOC}/bini.input.dvi        ${DOC}/biquat.input.dvi      \
    ${DOC}/bop.input.dvi         ${DOC}/bouquet.input.dvi   \
    ${DOC}/branchcut.input.dvi \
    ${DOC}/bstree.input.dvi      ${DOC}/bug10069.input.dvi      \
    ${DOC}/bug100.input.dvi      ${DOC}/bug101.input.dvi      \
    ${DOC}/bug103.input.dvi \
    ${DOC}/bug10312.input.dvi    ${DOC}/bug6357.input.dvi      \
    ${DOC}/bug9057.input.dvi     ${DOC}/bugs.input.dvi       \
    ${DOC}/c02aff.input.dvi      ${DOC}/c02agf.input.dvi   \
    ${DOC}/c05adf.input.dvi      ${DOC}/c05nbf.input.dvi   \
    ${DOC}/c05pbf.input.dvi      ${DOC}/c06eaf.input.dvi   \
    ${DOC}/c06ebf.input.dvi      ${DOC}/c06ecf.input.dvi   \
    ${DOC}/c06ekf.input.dvi      ${DOC}/c06fpf.input.dvi   \
    ${DOC}/c06fqf.input.dvi      ${DOC}/c06frf.input.dvi   \
    ${DOC}/c06fuf.input.dvi      ${DOC}/c06gbf.input.dvi   \
    ${DOC}/c06gcf.input.dvi      ${DOC}/c06gqf.input.dvi   \
    ${DOC}/c06gsf.input.dvi      ${DOC}/cachedf.input.dvi   \
    ${DOC}/calcprob.input.dvi    ${DOC}/calculus2.input.dvi \
    ${DOC}/calculus.input.dvi    ${DOC}/cardinal.input.dvi  \
    ${DOC}/card.input.dvi        ${DOC}/carten.input.dvi      \
    ${DOC}/cclass.input.dvi      ${DOC}/cdraw.input.dvi    \
    ${DOC}/char.input.dvi        ${DOC}/ch.input.dvi         \
    ${DOC}/charlwood.input.dvi   ${DOC}/cherry.input.dvi   \

```

$\{\text{DOC}\}/\text{chtheorem.input.dvi}$	$\{\text{DOC}\}/\text{classtalk.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{clifford.input.dvi}$	$\{\text{DOC}\}/\text{clements.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{clif.input.dvi}$	$\{\text{DOC}\}/\text{cmds.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{coercels.input.dvi}$	$\{\text{DOC}\}/\text{collect.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{color.input.dvi}$	$\{\text{DOC}\}/\text{complex.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{complexfactor.input.dvi}$	$\{\text{DOC}\}/\text{cohen.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{cone.input.dvi}$	$\{\text{DOC}\}/\text{conformal.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{constant.input.dvi}$	$\{\text{DOC}\}/\text{contfrac.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{contfrc.input.dvi}$	$\{\text{DOC}\}/\text{coordsys.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{curl.input.dvi}$	$\{\text{DOC}\}/\text{curry.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{cycles1.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{cycles.input.dvi}$	$\{\text{DOC}\}/\text{cycloid2.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{cycloid3.input.dvi}$	$\{\text{DOC}\}/\text{cycloid.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{cyfactor.input.dvi}$	$\{\text{DOC}\}/\text{d01ajf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d01akf.input.dvi}$	$\{\text{DOC}\}/\text{d01alf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d01amf.input.dvi}$	$\{\text{DOC}\}/\text{d01anf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d01apf.input.dvi}$	$\{\text{DOC}\}/\text{d01aqf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d01asf.input.dvi}$	$\{\text{DOC}\}/\text{d01bbf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d01fcf.input.dvi}$	$\{\text{DOC}\}/\text{d01gaf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d01gbf.input.dvi}$	$\{\text{DOC}\}/\text{d02bbf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d02bhf.input.dvi}$	$\{\text{DOC}\}/\text{d02cjf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d02ejf.input.dvi}$	$\{\text{DOC}\}/\text{d02gaf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d02gbf.input.dvi}$	$\{\text{DOC}\}/\text{d02kef.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d02raf.input.dvi}$	$\{\text{DOC}\}/\text{d03edf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{d03eef.input.dvi}$	$\{\text{DOC}\}/\text{d03faf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{damped.input.dvi}$	$\{\text{DOC}\}/\text{danzwill1.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{danzwill2.input.dvi}$	$\{\text{DOC}\}/\text{davenport.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{davis.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{de2re.input.dvi}$	$\{\text{DOC}\}/\text{decimal.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{defintef.input.dvi}$	$\{\text{DOC}\}/\text{defintrf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{defs.input.dvi}$	$\{\text{DOC}\}/\text{derham.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{derivefail.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{dfloat.input.dvi}$	$\{\text{DOC}\}/\text{dftrig.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{dhmatrix.input.dvi}$	$\{\text{DOC}\}/\text{dhtri.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{directproduct.input.dvi}$	$\{\text{DOC}\}/\text{distexpr.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{divisor.input.dvi}$	$\{\text{DOC}\}/\text{donsimple.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{dmp.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{dop.input.dvi}$	$\{\text{DOC}\}/\text{dpol.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{draw2dsf.input.dvi}$	$\{\text{DOC}\}/\text{drawalg.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{drawcfn.input.dvi}$	$\{\text{DOC}\}/\text{drawcfun.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{drawcurv.input.dvi}$	$\{\text{DOC}\}/\text{drawcx.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{drawex.input.dvi}$	$\{\text{DOC}\}/\text{draw.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{drawpoly.input.dvi}$	$\{\text{DOC}\}/\text{drawx.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{dropt.input.dvi}$	$\{\text{DOC}\}/\text{e01baf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e01bef.input.dvi}$	$\{\text{DOC}\}/\text{e01bff.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e01bgf.input.dvi}$	$\{\text{DOC}\}/\text{e01bhf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e01daf.input.dvi}$	$\{\text{DOC}\}/\text{e01saf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e01sbf.input.dvi}$	$\{\text{DOC}\}/\text{e01sef.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e01sff.input.dvi}$	$\{\text{DOC}\}/\text{e02adf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e02aef.input.dvi}$	$\{\text{DOC}\}/\text{e02agf.input.dvi}$	\backslash

$\{\text{DOC}\}/\text{e02ahf.input.dvi}$	$\{\text{DOC}\}/\text{e02ajf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e02akf.input.dvi}$	$\{\text{DOC}\}/\text{e02baf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e02bbf.input.dvi}$	$\{\text{DOC}\}/\text{e02bcf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e02bdf.input.dvi}$	$\{\text{DOC}\}/\text{e02bef.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e02daf.input.dvi}$	$\{\text{DOC}\}/\text{e02dcf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e02ddf.input.dvi}$	$\{\text{DOC}\}/\text{e02def.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e02dff.input.dvi}$	$\{\text{DOC}\}/\text{e02gaf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e02zaf.input.dvi}$	$\{\text{DOC}\}/\text{e04dgm.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e04fdf.input.dvi}$	$\{\text{DOC}\}/\text{e04gcf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e04jaf.input.dvi}$	$\{\text{DOC}\}/\text{e04mbf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e04naf.input.dvi}$	$\{\text{DOC}\}/\text{e04ucf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{e04ycf.input.dvi}$	$\{\text{DOC}\}/\text{e1.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{ei.input.dvi}$	$\{\text{DOC}\}/\text{easter.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{ecfact.as.dvi}$	$\{\text{DOC}\}/\text{efi.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{egg.input.dvi}$	$\{\text{DOC}\}/\text{eigen.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{elemfun.input.dvi}$	$\{\text{DOC}\}/\text{elemnum.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{elfuts.input.dvi}$	$\{\text{DOC}\}/\text{elt.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{en.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{eq.input.dvi}$	$\{\text{DOC}\}/\text{eqtbl.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{equation2.input.dvi}$	$\{\text{DOC}\}/\text{equation.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{errortrap.input.dvi}$	$\{\text{DOC}\}/\text{erf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{evalex.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{eval.input.dvi}$	$\{\text{DOC}\}/\text{exdiff.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{exampleagcode.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{exint.input.dvi}$	$\{\text{DOC}\}/\text{exit.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{exlap.input.dvi}$	$\{\text{DOC}\}/\text{exlimit.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{exp.input.dvi}$	$\{\text{DOC}\}/\text{exptest.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{expexpan.input.dvi}$	$\{\text{DOC}\}/\text{explim.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{expplot2d.input.dvi}$	$\{\text{DOC}\}/\text{expplot3d.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{expr1.input.dvi}$	$\{\text{DOC}\}/\text{expr.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{exprode.input.dvi}$	$\{\text{DOC}\}/\text{exprpoly.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{exseries.input.dvi}$	$\{\text{DOC}\}/\text{exsum.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f01brf.input.dvi}$	$\{\text{DOC}\}/\text{f01bsf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f01maf.input.dvi}$	$\{\text{DOC}\}/\text{f01mcf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f01qcf.input.dvi}$	$\{\text{DOC}\}/\text{f01qdf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f01qef.input.dvi}$	$\{\text{DOC}\}/\text{f01rcf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f01rdf.input.dvi}$	$\{\text{DOC}\}/\text{f01ref.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f02aaf.input.dvi}$	$\{\text{DOC}\}/\text{f02abf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f02adf.input.dvi}$	$\{\text{DOC}\}/\text{f02aef.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f02aff.input.dvi}$	$\{\text{DOC}\}/\text{f02agf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f02ajf.input.dvi}$	$\{\text{DOC}\}/\text{f02akf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f02awf.input.dvi}$	$\{\text{DOC}\}/\text{f02axf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f02bbf.input.dvi}$	$\{\text{DOC}\}/\text{f02bjf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f02fjf.input.dvi}$	$\{\text{DOC}\}/\text{f02wef.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f02xef.input.dvi}$	$\{\text{DOC}\}/\text{f04adf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f04arf.input.dvi}$	$\{\text{DOC}\}/\text{f04asf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f04atf.input.dvi}$	$\{\text{DOC}\}/\text{f04axf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f04faf.input.dvi}$	$\{\text{DOC}\}/\text{f04jgf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f04maf.input.dvi}$	$\{\text{DOC}\}/\text{f04mbf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f04mcf.input.dvi}$	$\{\text{DOC}\}/\text{f04qaf.input.dvi}$	\backslash

$\{\text{DOC}\}/\text{f07adf.input.dvi}$	$\{\text{DOC}\}/\text{f07aef.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{f07fdf.input.dvi}$	$\{\text{DOC}\}/\text{f07fef.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{farray.input.dvi}$	$\{\text{DOC}\}/\text{ffdemo.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{fferr.input.dvi}$	$\{\text{DOC}\}/\text{ffrac.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{ffieldbug.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{ffx72.input.dvi}$	$\{\text{DOC}\}/\text{fib.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{finitegraph.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{file.input.dvi}$	$\{\text{DOC}\}/\text{fixed.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{float1.input.dvi}$	$\{\text{DOC}\}/\text{float2.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{float.input.dvi}$	$\{\text{DOC}\}/\text{fname1.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{fname.input.dvi}$	$\{\text{DOC}\}/\text{fnla.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{fns.input.dvi}$	$\{\text{DOC}\}/\text{folium.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{fparfrac.input.dvi}$	$\{\text{DOC}\}/\text{fparfrc.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{frame.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{fr1.input.dvi}$	$\{\text{DOC}\}/\text{fr2.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{frac.input.dvi}$	$\{\text{DOC}\}/\text{fr.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{free.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{function.input.dvi}$	$\{\text{DOC}\}/\text{galois.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{gamma.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{gary1.input.dvi}$	$\{\text{DOC}\}/\text{gbf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{genups.input.dvi}$	$\{\text{DOC}\}/\text{gnarly1.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{gonshor.input.dvi}$	$\{\text{DOC}\}/\text{graphics.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{grdef.input.dvi}$	$\{\text{DOC}\}/\text{grpthry.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{gstbl.input.dvi}$	$\{\text{DOC}\}/\text{guess.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{heap.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{heat.input.dvi}$	$\{\text{DOC}\}/\text{helix.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{help.input.dvi}$	$\{\text{DOC}\}/\text{herm.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{heugcd.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{hexadec.input.dvi}$	$\{\text{DOC}\}/\text{hilbert.as.dvi}$	\backslash
$\{\text{DOC}\}/\text{huang.input.dvi}$	$\{\text{DOC}\}/\text{hyperbolicrules.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{hyperell.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{ico.input.dvi}$	\backslash	
$\{\text{DOC}\}/\text{ideal.input.dvi}$	$\{\text{DOC}\}/\text{ifact.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{ifthenelse.input.dvi}$	$\{\text{DOC}\}/\text{i2e.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{images1a.input.dvi}$	$\{\text{DOC}\}/\text{images1.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{images2a.input.dvi}$	$\{\text{DOC}\}/\text{images2.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{images3a.input.dvi}$	$\{\text{DOC}\}/\text{images3.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{images5a.input.dvi}$	$\{\text{DOC}\}/\text{images5.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{images6a.input.dvi}$	$\{\text{DOC}\}/\text{images6.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{images7a.input.dvi}$	$\{\text{DOC}\}/\text{images7.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{images8a.input.dvi}$	$\{\text{DOC}\}/\text{images8.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{infprod.input.dvi}$	$\{\text{DOC}\}/\text{inputform.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{intaf.input.dvi}$	$\{\text{DOC}\}/\text{intbypart.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{intdeq.input.dvi}$	$\{\text{DOC}\}/\text{intef2.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{intef.input.dvi}$	$\{\text{DOC}\}/\text{intg0.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{intheory.input.dvi}$	$\{\text{DOC}\}/\text{int.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{intl1f.input.dvi}$	$\{\text{DOC}\}/\text{intmix2.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{intmix.input.dvi}$	$\{\text{DOC}\}/\text{intrf.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{ipftest.input.dvi}$	$\{\text{DOC}\}/\text{is.input.dvi}$	\backslash
$\{\text{DOC}\}/\text{isprime.input.dvi}$	\backslash	

<code>\${DOC}/kamke0.input.dvi</code>	<code>\${DOC}/kamke1.input.dvi</code>	<code>\</code>
<code>\${DOC}/kamke2.input.dvi</code>	<code>\${DOC}/kamke3.input.dvi</code>	<code>\</code>
<code>\${DOC}/kamke4.input.dvi</code>	<code>\${DOC}/kamke5.input.dvi</code>	<code>\</code>
<code>\${DOC}/kamke6.input.dvi</code>	<code>\${DOC}/kamke7.input.dvi</code>	<code>\</code>
<code>\${DOC}/kernel.input.dvi</code>	<code>\${DOC}/knot2.input.dvi</code>	<code>\</code>
<code>\${DOC}/knot.input.dvi</code>	<code>\${DOC}/knownbugs.input.dvi</code>	<code>\</code>
<code>\${DOC}/kovacic.input.dvi</code>	<code>\${DOC}/kuipers.input.dvi</code>	<code>\</code>
<code>\${DOC}/laplace.input.dvi</code>	<code>\${DOC}/leg.input.dvi</code>	<code>\</code>
<code>\${DOC}/lextripk.input.dvi</code>	<code>\</code>	
<code>\${DOC}/lib.input.dvi</code>	<code>\${DOC}/limit.input.dvi</code>	<code>\</code>
<code>\${DOC}/linalg.input.dvi</code>	<code>\${DOC}/lindep.input.dvi</code>	<code>\</code>
<code>\${DOC}/liska.input.dvi</code>	<code>\</code>	
<code>\${DOC}/liss1.input.dvi</code>	<code>\${DOC}/liss2.input.dvi</code>	<code>\</code>
<code>\${DOC}/list.input.dvi</code>	<code>\${DOC}/liu.input.dvi</code>	<code>\</code>
<code>\${DOC}/lode.input.dvi</code>	<code>\</code>	
<code>\${DOC}/lodesys.input.dvi</code>	<code>\${DOC}/lodo1.input.dvi</code>	<code>\</code>
<code>\${DOC}/lodo2.input.dvi</code>	<code>\${DOC}/lodo3.input.dvi</code>	<code>\</code>
<code>\${DOC}/lodof.input.dvi</code>	<code>\${DOC}/lodo.input.dvi</code>	<code>\</code>
<code>\${DOC}/log.input.dvi</code>	<code>\</code>	
<code>\${DOC}/loop.input.dvi</code>	<code>\${DOC}/lpoly.input.dvi</code>	<code>\</code>
<code>\${DOC}/lump.input.dvi</code>	<code>\${DOC}/lupfact.input.dvi</code>	<code>\</code>
<code>\${DOC}/lword.input.dvi</code>	<code>\${DOC}/macbug.input.dvi</code>	<code>\</code>
<code>\${DOC}/machinearithmetic.input.dvi</code>	<code>\</code>	
<code>\${DOC}/macros.input.dvi</code>	<code>\${DOC}/magma.input.dvi</code>	<code>\</code>
<code>\${DOC}/manuel.input.dvi</code>	<code>\${DOC}/mapleok.input.dvi</code>	<code>\</code>
<code>\${DOC}/marcbench.input.dvi</code>	<code>\${DOC}/matbug.input.dvi</code>	<code>\</code>
<code>\${DOC}/mathml.input.dvi</code>	<code>\</code>	
<code>\${DOC}/matops.as.dvi</code>	<code>\${DOC}/matrix1.input.dvi</code>	<code>\</code>
<code>\${DOC}/matrix22.input.dvi</code>	<code>\${DOC}/matrix.input.dvi</code>	<code>\</code>
<code>\${DOC}/matrox.input.dvi</code>	<code>\${DOC}/mfifact.input.dvi</code>	<code>\</code>
<code>\${DOC}/mkfunc.input.dvi</code>	<code>\${DOC}/monitortest.input.dvi</code>	<code>\</code>
<code>\${DOC}/mountain.input.dvi</code>	<code>\</code>	
<code>\${DOC}/mpoly.input.dvi</code>	<code>\${DOC}/mset2.input.dvi</code>	<code>\</code>
<code>\${DOC}/mset.input.dvi</code>	<code>\${DOC}/mult2d.input.dvi</code>	<code>\</code>
<code>\${DOC}/mult3d.input.dvi</code>	<code>\${DOC}/multfact.input.dvi</code>	<code>\</code>
<code>\${DOC}/multiple.input.dvi</code>	<code>\${DOC}/multknot.input.dvi</code>	<code>\</code>
<code>\${DOC}/ndftip.input.dvi</code>	<code>\${DOC}/negfloats.input.dvi</code>	<code>\</code>
<code>\${DOC}/nepip.input.dvi</code>	<code>\${DOC}/newlodo.input.dvi</code>	<code>\</code>
<code>\${DOC}/newton.input.dvi</code>	<code>\${DOC}/newtonlisp.input.dvi</code>	<code>\</code>
<code>\${DOC}/numericgamma.input.dvi</code>	<code>\${DOC}/nnode.input.dvi</code>	<code>\</code>
<code>\${DOC}/none.input.dvi</code>	<code>\${DOC}/nonlinhomodiffeq.input.dvi</code>	<code>\</code>
<code>\${DOC}/noonburg.input.dvi</code>	<code>\</code>	
<code>\${DOC}/noptip.input.dvi</code>	<code>\${DOC}/nqip.input.dvi</code>	<code>\</code>
<code>\${DOC}/nsfip.input.dvi</code>	<code>\${DOC}/ntube.input.dvi</code>	<code>\</code>
<code>\${DOC}/numbers.input.dvi</code>	<code>\${DOC}/oct.input.dvi</code>	<code>\</code>
<code>\${DOC}/octonion.input.dvi</code>	<code>\${DOC}/ode.input.dvi</code>	<code>\</code>
<code>\${DOC}/odpol.input.dvi</code>	<code>\${DOC}/op1.input.dvi</code>	<code>\</code>
<code>\${DOC}/opalg.input.dvi</code>	<code>\${DOC}/operator.input.dvi</code>	<code>\</code>
<code>\${DOC}/op.input.dvi</code>	<code>\${DOC}/ovar.input.dvi</code>	<code>\</code>
<code>\${DOC}/overload.input.dvi</code>	<code>\</code>	

<code>\${DOC}/padic.input.dvi</code>	<code>\${DOC}/paff.input.dvi</code>	<code>\</code>
<code>\${DOC}/paffexample.input.dvi</code>	<code>\${DOC}/palette.input.dvi</code>	<code>\</code>
<code>\${DOC}/parabola.input.dvi</code>	<code>\${DOC}/parpcurv.input.dvi</code>	<code>\</code>
<code>\${DOC}/parscurv.input.dvi</code>	<code>\${DOC}/parsurf.input.dvi</code>	<code>\</code>
<code>\${DOC}/pascal1.input.dvi</code>	<code>\${DOC}/pascal.input.dvi</code>	<code>\</code>
<code>\${DOC}/pat.input.dvi</code>	<code>\${DOC}/patch51.input.dvi</code>	<code>\</code>
<code>\${DOC}/patmatch.input.dvi</code>	<code>\</code>	
<code>\${DOC}/pdecomp0.as.dvi</code>	<code>\${DOC}/perman.input.dvi</code>	<code>\</code>
<code>\${DOC}/perm.input.dvi</code>	<code>\${DOC}/pfafrican.input.dvi</code>	<code>\</code>
<code>\${DOC}/pfr1.input.dvi</code>	<code>\${DOC}/pgcd.input.dvi</code>	<code>\</code>
<code>\${DOC}/pfr.input.dvi</code>	<code>\${DOC}/pinch.input.dvi</code>	<code>\</code>
<code>\${DOC}/plotfile.input.dvi</code>	<code>\${DOC}/plotlist.input.dvi</code>	<code>\</code>
<code>\${DOC}/pollevel.input.dvi</code>	<code>\${DOC}/polygamma.input.dvi</code>	<code>\</code>
<code>\${DOC}/poly1.input.dvi</code>	<code>\</code>	
<code>\${DOC}/polycoer.input.dvi</code>	<code>\${DOC}/poly.input.dvi</code>	<code>\</code>
<code>\${DOC}/psgenfcn.input.dvi</code>	<code>\${DOC}/quat1.input.dvi</code>	<code>\</code>
<code>\${DOC}/quat.input.dvi</code>	<code>\${DOC}/r20abugs.input.dvi</code>	<code>\</code>
<code>\${DOC}/r20bugs.input.dvi</code>	<code>\${DOC}/r21bugsbig.input.dvi</code>	<code>\</code>
<code>\${DOC}/r21bugs.input.dvi</code>	<code>\${DOC}/radff.input.dvi</code>	<code>\</code>
<code>\${DOC}/radix.input.dvi</code>	<code>\${DOC}/realclos.input.dvi</code>	<code>\</code>
<code>\${DOC}/reclos.input.dvi</code>	<code>\${DOC}/reclos2.input.dvi</code>	<code>\</code>
<code>\${DOC}/regset.input.dvi</code>	<code>\${DOC}/reductio.input.dvi</code>	<code>\</code>
<code>\${DOC}/regset.input.dvi</code>	<code>\${DOC}/repa6.input.dvi</code>	<code>\</code>
<code>\${DOC}/ribbon.input.dvi</code>	<code>\${DOC}/ribbons.input.dvi</code>	<code>\</code>
<code>\${DOC}/ribbonsnew.input.dvi</code>	<code>\</code>	
<code>\${DOC}/rich1a.input.dvi</code>	<code>\${DOC}/rich1b.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich2.input.dvi</code>	<code>\</code>	
<code>\${DOC}/rich3a.input.dvi</code>	<code>\${DOC}/rich3b.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich3c.input.dvi</code>	<code>\${DOC}/rich3d.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich3e.input.dvi</code>	<code>\${DOC}/rich3f.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich3g.input.dvi</code>	<code>\${DOC}/rich3h.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich3i.input.dvi</code>	<code>\${DOC}/rich3j.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich3k.input.dvi</code>	<code>\${DOC}/rich3l.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich3m.input.dvi</code>	<code>\${DOC}/rich3n.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich3o.input.dvi</code>	<code>\${DOC}/rich3p.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich3q.input.dvi</code>	<code>\${DOC}/rich3r.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich3s.input.dvi</code>	<code>\${DOC}/rich3t.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich4a.input.dvi</code>	<code>\${DOC}/rich4b.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich4c.input.dvi</code>	<code>\${DOC}/rich4d.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich4e.input.dvi</code>	<code>\${DOC}/rich4f.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich4g.input.dvi</code>	<code>\${DOC}/rich4h.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich4i.input.dvi</code>	<code>\${DOC}/rich4j.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich5.input.dvi</code>	<code>\${DOC}/rich6a.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich6b.input.dvi</code>	<code>\${DOC}/rich6c.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich6d.input.dvi</code>	<code>\${DOC}/rich6e.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich7.input.dvi</code>	<code>\${DOC}/rich8a.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich8b.input.dvi</code>	<code>\${DOC}/rich8c.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich8d.input.dvi</code>	<code>\${DOC}/rich9a.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich9b.input.dvi</code>	<code>\${DOC}/rich10a.input.dvi</code>	<code>\</code>
<code>\${DOC}/rich10b.input.dvi</code>	<code>\${DOC}/rich10c.input.dvi</code>	<code>\</code>

```

${DOC}/rich10d.input.dvi      ${DOC}/rich10e.input.dvi \
${DOC}/rich10f.input.dvi \
${DOC}/rich11a.input.dvi ${DOC}/rich11b.input.dvi \
${DOC}/rich11c.input.dvi ${DOC}/rich11d.input.dvi \
${DOC}/rich11e.input.dvi \
${DOC}/rich12a.input.dvi ${DOC}/rich12b.input.dvi \
${DOC}/rich12c.input.dvi ${DOC}/rich12d.input.dvi \
${DOC}/rich12e.input.dvi ${DOC}/rich12f.input.dvi \
${DOC}/richder1a.input.dvi ${DOC}/richder1b.input.dvi \
${DOC}/richder2.input.dvi  ${DOC}/richder3a.input.dvi \
${DOC}/richder3b.input.dvi ${DOC}/richder3c.input.dvi \
${DOC}/richder3d.input.dvi ${DOC}/richder3e.input.dvi \
${DOC}/richder3f.input.dvi ${DOC}/richder3g.input.dvi \
${DOC}/richder3h.input.dvi ${DOC}/richder3i.input.dvi \
${DOC}/richder3j.input.dvi ${DOC}/richder3k.input.dvi \
${DOC}/richder3l.input.dvi ${DOC}/richder3m.input.dvi \
${DOC}/richder3n.input.dvi ${DOC}/richder3o.input.dvi \
${DOC}/richder3p.input.dvi ${DOC}/richder3q.input.dvi \
${DOC}/richder3r.input.dvi ${DOC}/richder3s.input.dvi \
${DOC}/richder3t.input.dvi ${DOC}/richder4a.input.dvi \
${DOC}/richder4b.input.dvi ${DOC}/richder4c.input.dvi \
${DOC}/richder4d.input.dvi ${DOC}/richder4e.input.dvi \
${DOC}/richder4f.input.dvi ${DOC}/richder5.input.dvi \
${DOC}/richder6a.input.dvi ${DOC}/richder6b.input.dvi \
${DOC}/richder6c.input.dvi ${DOC}/richder6d.input.dvi \
${DOC}/richder6e.input.dvi \
${DOC}/richder12a.input.dvi ${DOC}/richder12b.input.dvi \
${DOC}/richder12c.input.dvi ${DOC}/richder12d.input.dvi \
${DOC}/richder12e.input.dvi ${DOC}/richder12f.input.dvi \
${DOC}/richalgebraic000-099.input.dvi \
${DOC}/richalgebraic100-199.input.dvi \
${DOC}/richalgebraic200-299.input.dvi \
${DOC}/richalgebraic300-399.input.dvi \
${DOC}/richalgebraic400-461.input.dvi \
${DOC}/richerror000-078.input.dvi \
${DOC}/richexponential.input.dvi \
${DOC}/richhyper000-099.input.dvi \
${DOC}/richhyper100-199.input.dvi \
${DOC}/richhyper200-299.input.dvi \
${DOC}/richhyper300-399.input.dvi \
${DOC}/richhyper400-499.input.dvi \
${DOC}/richhyper500-599.input.dvi \
${DOC}/richhyper600-699.input.dvi \
${DOC}/richhyper700-799.input.dvi \
${DOC}/richhyper800-899.input.dvi \
${DOC}/richhyper900-999.input.dvi \
${DOC}/richhyper1000-1098.input.dvi \
${DOC}/richintfunc000-032.input.dvi \
${DOC}/richinvhyper000-099.input.dvi \
${DOC}/richinvhyper100-199.input.dvi \

```

```

${DOC}/richinvtrig000-092.input.dvi \
${DOC}/richlog000-099.input.dvi \
${DOC}/richlog100-199.input.dvi \
${DOC}/richlog200-299.input.dvi \
${DOC}/richlog300-391.input.dvi \
${DOC}/richrational.input.dvi \
${DOC}/richspecfunc000-022.input.dvi \
${DOC}/richtrig000-099.input.dvi \
${DOC}/richtrig100-199.input.dvi \
${DOC}/richtrig200-299.input.dvi \
${DOC}/richtrig300-399.input.dvi \
${DOC}/richtrig400-499.input.dvi \
${DOC}/richtrig500-599.input.dvi \
${DOC}/richtrig600-699.input.dvi \
${DOC}/richtrig700-799.input.dvi \
${DOC}/richtrig800-899.input.dvi \
${DOC}/richtrig900-920.input.dvi \
${DOC}/rk4draw.input.dvi      ${DOC}/risch.input.dvi      \
${DOC}/robidoux.input.dvi     ${DOC}/roman.input.dvi     \
${DOC}/romnum.as.dvi          ${DOC}/roots.input.dvi     \
${DOC}/rsa.input.dvi \
${DOC}/ruleset.input.dvi      ${DOC}/rules.input.dvi      \
${DOC}/segletes.input.dvi \
${DOC}/spline.input.dvi       ${DOC}/sae.input.dvi \
${DOC}/schaum1.input.dvi      ${DOC}/schaum2.input.dvi \
${DOC}/schaum3.input.dvi      ${DOC}/schaum4.input.dvi \
${DOC}/schaum5.input.dvi      ${DOC}/schaum6.input.dvi \
${DOC}/schaum7.input.dvi      ${DOC}/schaum8.input.dvi \
${DOC}/schaum9.input.dvi      ${DOC}/schaum10.input.dvi \
${DOC}/schaum11.input.dvi     ${DOC}/schaum12.input.dvi \
${DOC}/schaum13.input.dvi     ${DOC}/schaum14.input.dvi \
${DOC}/schaum15.input.dvi     ${DOC}/schaum16.input.dvi \
${DOC}/schaum17.input.dvi     ${DOC}/schaum18.input.dvi \
${DOC}/schaum19.input.dvi     ${DOC}/schaum20.input.dvi \
${DOC}/schaum21.input.dvi     ${DOC}/schaum22.input.dvi \
${DOC}/schaum23.input.dvi     ${DOC}/schaum24.input.dvi \
${DOC}/schaum25.input.dvi     ${DOC}/schaum26.input.dvi \
${DOC}/schaum27.input.dvi     ${DOC}/schaum28.input.dvi \
${DOC}/schaum29.input.dvi     ${DOC}/schaum30.input.dvi \
${DOC}/schaum31.input.dvi     ${DOC}/schaum32.input.dvi \
${DOC}/schaum33.input.dvi     ${DOC}/schaum34.input.dvi \
${DOC}/s01eaf.input.dvi       ${DOC}/s13aaf.input.dvi \
${DOC}/s13acf.input.dvi       ${DOC}/s13adf.input.dvi \
${DOC}/s14aaf.input.dvi       ${DOC}/s14abf.input.dvi \
${DOC}/s14baf.input.dvi       ${DOC}/s15adf.input.dvi \
${DOC}/s15aef.input.dvi       ${DOC}/s17acf.input.dvi \
${DOC}/s17adf.input.dvi       ${DOC}/s17aef.input.dvi \
${DOC}/s17aff.input.dvi       ${DOC}/s17agf.input.dvi \
${DOC}/s17ahf.input.dvi       ${DOC}/s17ajf.input.dvi \
${DOC}/s17akf.input.dvi       ${DOC}/s17dcf.input.dvi \

```

<code>\${DOC}/s17def.input.dvi</code>	<code>\${DOC}/s17dgf.input.dvi</code>	<code>\</code>
<code>\${DOC}/s17dhf.input.dvi</code>	<code>\${DOC}/s17dlf.input.dvi</code>	<code>\</code>
<code>\${DOC}/s18acf.input.dvi</code>	<code>\${DOC}/s18adf.input.dvi</code>	<code>\</code>
<code>\${DOC}/s18aef.input.dvi</code>	<code>\${DOC}/s18aff.input.dvi</code>	<code>\</code>
<code>\${DOC}/s18dcf.input.dvi</code>	<code>\${DOC}/s18def.input.dvi</code>	<code>\</code>
<code>\${DOC}/s19aaf.input.dvi</code>	<code>\${DOC}/s19abf.input.dvi</code>	<code>\</code>
<code>\${DOC}/s19acf.input.dvi</code>	<code>\${DOC}/s19adf.input.dvi</code>	<code>\</code>
<code>\${DOC}/s20acf.input.dvi</code>	<code>\${DOC}/s20adf.input.dvi</code>	<code>\</code>
<code>\${DOC}/s21baf.input.dvi</code>	<code>\${DOC}/s21bbf.input.dvi</code>	<code>\</code>
<code>\${DOC}/s21bcf.input.dvi</code>	<code>\${DOC}/s21bdf.input.dvi</code>	<code>\</code>
<code>\${DOC}/saddle.input.dvi</code>	<code>\${DOC}/scherk.input.dvi</code>	<code>\</code>
<code>\${DOC}/scope.input.dvi</code>	<code>\${DOC}/seccsc.input.dvi</code>	<code>\</code>
<code>\${DOC}/segbind.input.dvi</code>	<code>\</code>	
<code>\${DOC}/seg.input.dvi</code>	<code>\${DOC}/series2.input.dvi</code>	<code>\</code>
<code>\${DOC}/series.input.dvi</code>	<code>\${DOC}/sersolve.input.dvi</code>	<code>\</code>
<code>\${DOC}/set.input.dvi</code>	<code>\${DOC}/setcmd.input.dvi</code>	<code>\</code>
<code>\${DOC}/shannonmatrix.input.dvi</code>	<code>\${DOC}/simplify.input.dvi</code>	<code>\</code>
<code>\${DOC}/sincos.input.dvi</code>	<code>\</code>	
<code>\${DOC}/sinhcosh.input.dvi</code>	<code>\${DOC}/sincosex.input.dvi</code>	<code>\</code>
<code>\${DOC}/sininv.input.dvi</code>	<code>\${DOC}/sinsin2.input.dvi</code>	<code>\</code>
<code>\${DOC}/sinsin.input.dvi</code>	<code>\${DOC}/sint.input.dvi</code>	<code>\</code>
<code>\${DOC}/skew.input.dvi</code>	<code>\${DOC}/slowint.input.dvi</code>	<code>\</code>
<code>\${DOC}/solveperf.input.dvi</code>	<code>\</code>	
<code>\${DOC}/solveetra.input.dvi</code>	<code>\${DOC}/space3.input.dvi</code>	<code>\</code>
<code>\${DOC}/spadprof.input.dvi</code>	<code>\${DOC}/spiral.input.dvi</code>	<code>\</code>
<code>\${DOC}/sqmatrix.input.dvi</code>	<code>\${DOC}/sqrt3.input.dvi</code>	<code>\</code>
<code>\${DOC}/sregset.input.dvi</code>	<code>\</code>	
<code>\${DOC}/stbl.input.dvi</code>	<code>\${DOC}/stream2.input.dvi</code>	<code>\</code>
<code>\${DOC}/stream.input.dvi</code>	<code>\${DOC}/streams.input.dvi</code>	<code>\</code>
<code>\${DOC}/string.input.dvi</code>	<code>\${DOC}/strtbl.input.dvi</code>	<code>\</code>
<code>\${DOC}/summation.input.dvi</code>	<code>\</code>	
<code>\${DOC}/symbol.input.dvi</code>	<code>\${DOC}/synonym2.input.dvi</code>	<code>\</code>
<code>\${DOC}/synonym.input.dvi</code>	<code>\${DOC}/t111293.input.dvi</code>	<code>\</code>
<code>\${DOC}/table.input.dvi</code>	<code>\${DOC}/tanatan.input.dvi</code>	<code>\</code>
<code>\${DOC}/tancot.input.dvi</code>	<code>\${DOC}/tanhcoth.input.dvi</code>	<code>\</code>
<code>\${DOC}/tbagg.input.dvi</code>	<code>\${DOC}/telford.input.dvi</code>	<code>\</code>
<code>\${DOC}/test.input.dvi</code>	<code>\${DOC}/tetra.input.dvi</code>	<code>\</code>
<code>\${DOC}/textfile.input.dvi</code>	<code>\${DOC}/tknot.input.dvi</code>	<code>\</code>
<code>\${DOC}/torus.input.dvi</code>	<code>\${DOC}/testpackage.input.dvi</code>	<code>\</code>
<code>\${DOC}/testprob.input.dvi</code>	<code>\</code>	
<code>\${DOC}/tpiezas001.input.dvi</code>	<code>\</code>	
<code>\${DOC}/tpiezas002.input.dvi</code>	<code>\</code>	
<code>\${DOC}/tree.input.dvi</code>	<code>\${DOC}/trigtests.input.dvi</code>	<code>\</code>
<code>\${DOC}/triglim.input.dvi</code>	<code>\${DOC}/tschirn.input.dvi</code>	<code>\</code>
<code>\${DOC}/tsetcatbutcher.input.dvi</code>	<code>\</code>	
<code>\${DOC}/tsetcatchemical.input.dvi</code>	<code>\</code>	
<code>\${DOC}/tsetcatvermeer.input.dvi</code>	<code>\</code>	
<code>\${DOC}/tuplebug.input.dvi</code>	<code>\</code>	
<code>\${DOC}/tutchap1.input.dvi</code>	<code>\${DOC}/tutchap2.input.dvi</code>	<code>\</code>
<code>\${DOC}/tutchap3.input.dvi</code>	<code>\${DOC}/tutchap4.input.dvi</code>	<code>\</code>

```

${DOC}/tutchap67.input.dvi    ${DOC}/typetower.input.dvi  \
${DOC}/typo.input.dvi        \
${DOC}/uniseq.input.dvi      \
${DOC}/up.input.dvi          \
${DOC}/vector.input.dvi      ${DOC}/vectors.input.dvi  \
${DOC}/viewdef.input.dvi     ${DOC}/void.input.dvi    \
${DOC}/wester.input.dvi      ${DOC}/wiggle.input.dvi    \
${DOC}/wutset.input.dvi      \
${DOC}/xpoly.input.dvi       ${DOC}/xpr.input.dvi       \
${DOC}/wangeez.input.dvi     ${DOC}/zimmbron.input.dvi  \
${DOC}/zdsolve.input.dvi     ${DOC}/zimmer.input.dvi   \
${DOC}/zlindep.input.dvi

all: ${FILES} ${FILES2} ${ASFILES} ${RICHINPUT} regress ${DOCFILES}
@echo 1 finished ${IN}

\getchunk{genericRules}

use:
@echo si18 making ${OUT} from ${IN}

regress:
@echo si19 making ${MID}
@ ${BOOKS}/tanglec ${IN}/Makefile.pamphlet "regression tests" \
    >${MID}/Makefile
@ echo 3a tpdhere parallel making ${MID}
@ echo 3b tpdhere parallel making ${MID}
( cd ${MID}; ${ENV} ${MAKE} ${TESTSET} )

bug:
@echo si20 making ${OUT} from ${IN}

document:
@echo si21 documenting ${OUT}

clean:
@echo si22 cleaning ${MID}
@rm -rf ${MID}
@echo si23 cleaning ${OUT}
@rm -rf ${OUT}
@rm -f Makefile Makefile.dvi

```

References

- [1] nothing