1.1 Introduction to package fsimp

Documentation is under construction!

The `fsimp` package provides a 'fullsimp' simplification function for expressions. It uses the simplification routines in core Maxima, but combines them with an algorithm that allows expressions to grow and shrink while trying different simplification routines. It always chooses the smallest expression as the most simple. The user has some control over the algorithm and routines.

1.2 Functions and Variables for fsimp

`fsdebug` [Variable]

Setting the variable `fsdebug` to 1 will allow the user to see the fsimp function operations, list selection of simplification routines, etc.

`fsimp` (`expr`,[*simp1,simp2,...*]) [Function]

The `fullsimp` function takes an input expression `expr` and attempts to find a simpler form using the builtin simplification routines in core Maxima. These include: `[resimplify, expand, combine, radcan, ratsimp, rootscontract, xthru, multthru, factor, sqrtdenest, triglist,exptlist, loglist]`. Additional trigonometric simplifications are applied as well.

`fullsimp` tries to find the smallest equivalent expression based on the Common Lisp `conssize` of the expression.

The option arguments to `fullsimp` are simplification routines the user wants excluded from the list above.

```
(%i1) load("fsimp.mac");
(%o1)      /home/ehm/math/Maxima/share/ehm/fullsimp-maxima/fsimp.mac
(%i2) fullsimp((1+cos(t))/sin(t));
                                        t
(%o2)                                cot(-)
                                        2
(%i3) fullsimp(cos(x)+%i*sin(x));
                                      %i x
(%o3)                                %e
```

If you wish to exclude trigonometric simplifications,

```
(%i1) load("fsimp.mac");
(%o1)      /home/ehm/math/Maxima/share/ehm/fullsimp-maxima/fsimp.mac
(%i2) fullsimp((1+cos(t))/sin(t),fstrigsimp);
(%o2)                          (cos(t) + 1) csc(t)
```

Appendix A Function and Variable index