# Usage Notes for the *Mathematica* Package PrincipalStress

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This is a program for drawing MOHR's circle of stress for biaxial stress and finding principal stresses. The main module `PrincipalStress` is called in one of two ways:

- `PrincipalStress[sigmax, sigmay, tauxy, units, ndec, "outputfile.ps"]`
- `PrincipalStress[sigmax, sigmay, tauxy, units, ndec]`

These two calls differ from each other only in the last argument, which is optional. If this sixth argument is present, it is the name of a *PostScript* file in which the resulting figure is to be saved. The utility *psfix* is used to write this file; users may need to change the call to *psfix* if their machine uses a different utility to modify *PostScript* files generated by *Mathematica*. If the sixth argument is absent, MOHR's circle is shown on the screen. The first five arguments have the following meanings:

**sigmax, sigmay** Normal stresses on the $X$ and $Y$ faces of the stress element, positive if tensile, negative if compressive.

**tauxy** Shear stress on the $X$ face, positive if tending to rotate the stress element clockwise, negative if counterclockwise.

**units** A string, such as `"MPa"` or `"ksi"`, defining stress units. This is used only for labeling plots.

**ndec** An integer defining the number of digits following the decimal point. This is used only for labeling numerical values of stresses and angles in the plots.

As test runs try the following:

```
PrincipalStress[120, -80, -60, "MPa", 2]
PrincipalStress[20, -8, -6, "ksi", 3]
PrincipalStress[20, -8, -6, "ksi", 3, "pstressfig.ps"]
```

The last of these test runs will generate the plots shown in Figure 1.

Please e-mail all bug reports to the author at *lk3a@cars.mech.virginia.edu* or *lk3a@kelvin.seas.virginia.edu*.

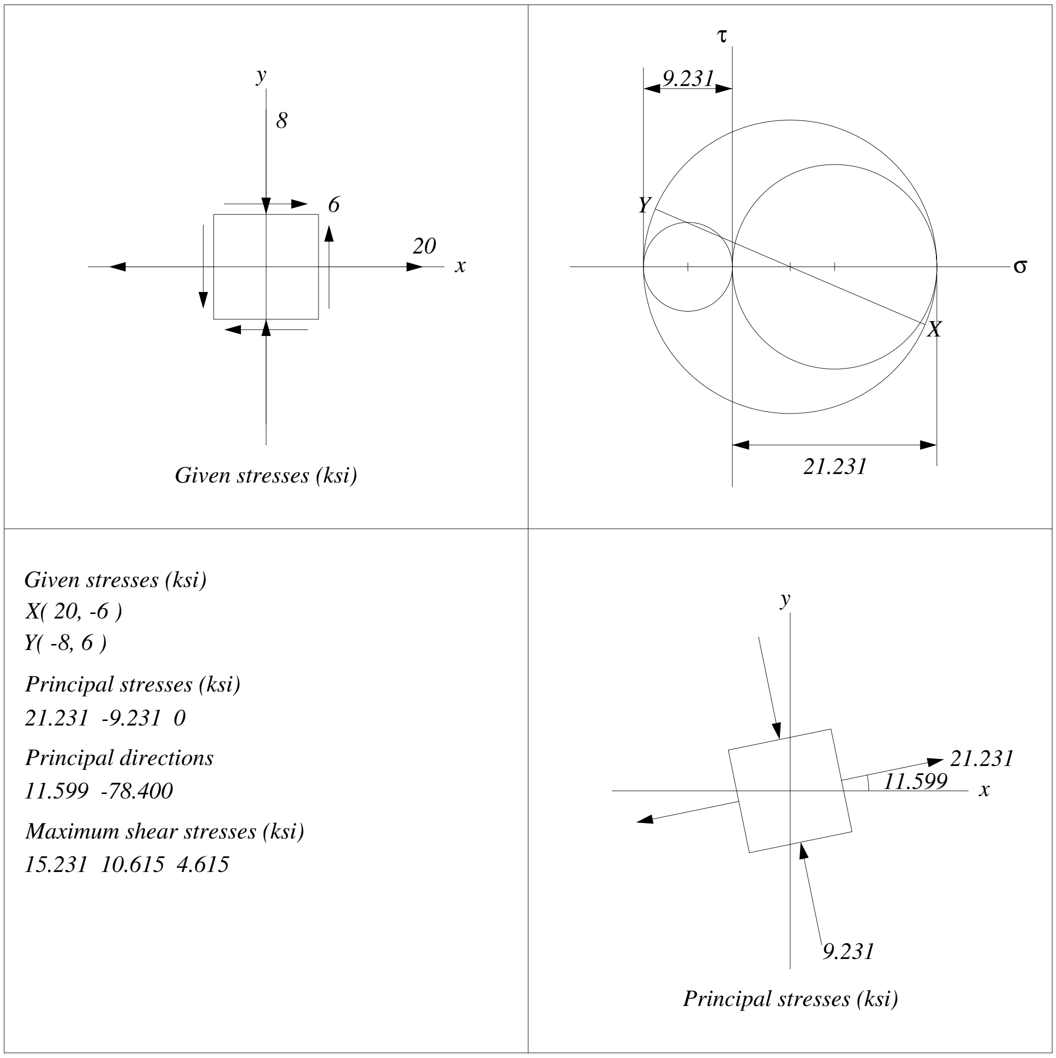


Figure 1: *Plots for the Third Test Example*