

This first command spits out the roots of a polynomial equation. Try changing that 45 to a 40 and see what happens.

```
> solve( -r^3-r^2+21*r+45=0 , r);
```

$$5, -3, -3$$

Notice that this next command seems to give up and throw in the towel.

```
> solve( x^4 + x + 1 = 0 , x );
```

$$\text{RootOf}(\_Z^4 + \_Z + 1, \text{index} = 1), \text{RootOf}(\_Z^4 + \_Z + 1, \text{index} = 2),$$

$$\text{RootOf}(\_Z^4 + \_Z + 1, \text{index} = 3), \text{RootOf}(\_Z^4 + \_Z + 1, \text{index} = 4)$$

However, if I ask MAPLE to evaluate those roots as floating point numbers, I get: (Note: % stands for the output of the previous command.)

```
> evalf( {%} );
```

$$\{-0.7271360845 - 0.4300142883 I, -0.7271360845 + 0.4300142883 I,$$

$$0.7271360845 - 0.9340992895 I, 0.7271360845 + 0.9340992895 I\}$$

Here is another fun example.

```
> solve( x^4 - 2*x^3 + 2 = 0 , x );
```

$$\text{RootOf}(\_Z^4 - 2 \_Z^3 + 2, \text{index} = 1), \text{RootOf}(\_Z^4 - 2 \_Z^3 + 2, \text{index} = 2),$$

$$\text{RootOf}(\_Z^4 - 2 \_Z^3 + 2, \text{index} = 3), \text{RootOf}(\_Z^4 - 2 \_Z^3 + 2, \text{index} = 4)$$

```
> allvalues( {%} );
```

$$\left\{ \frac{1}{2} - \frac{1}{2}I - \frac{\sqrt{4+2I}}{2}, \frac{1}{2} - \frac{1}{2}I + \frac{\sqrt{4+2I}}{2}, \frac{1}{2} + \frac{1}{2}I - \frac{\sqrt{4-2I}}{2}, \frac{1}{2} + \frac{1}{2}I + \frac{\sqrt{4-2I}}{2} \right\}$$

That last command asked MAPLE to spit out the actual values if it can. To see a manual page about the solve command, type

```
> ?solve
```

You can scroll down to the bottom of the manual page to see lots of examples.