Example of Equation in Factored Form

Math 130 *Kovitz*

Solve for x.

$$\left(\sqrt{x} - 4\right)(x + 2) = 0.$$

Set each factor to 0; do not multiply out. Then check the solutions in the *original* equation.

$\sqrt{x} - 4 = 0.$
$\sqrt{x} = 4.$
$x = 4^2 = 16.$

Then:

$x + 2 = 0.$
$x = -2.$

Check the answers.

$$\left(\sqrt{16} - 4\right)(16 + 2) = 0.$$

$$(4 - 4)(18) = 0.$$

$$0 = 0.$$

and

$$\left(\sqrt{-2} - 4\right)(-2 + 2) = 0$$

This is not a solution over the reals, because the square root of a negative number is not defined.

The only solution is $x = 16$.