Finding Roots in Factored Form

When we want to find the roots (or zeros, or x-intercepts) of a quadratic relation, we want to find the x-values when $y = 0$.

Example

Find the roots of $y = (x - 5)(x + 3)$.

To find the roots, set $y = 0$:

$$0 = (x - 5)(x + 3)$$

For this equation to be true, one of the two factors must be equal to zero; that is,

$$x - 5 = 0 \quad \text{or} \quad x + 3 = 0$$

$$x = 5 \quad \text{or} \quad x = -3$$

The roots are 5 and -3.

Practice

Find the roots of each quadratic relation.

a) $y = (x + 2)(x - 4)$

b) $y = (x - 1)(x - 1)$

c) $y = 4(x + 1)\left(x + \frac{1}{2}\right)$

d) $y = (2x + 5)(3x - 1)$

e) $y = x(x + 5)$

f) $y = -8\left(\frac{1}{2}x + 1\right)\left(3x - \frac{1}{2}\right)$

More practice on textbook page 279 #1abdf, 3ade, 4ad, 7, 9.