

Use the quadratic formula to find the x-intercepts.

1. $y = 3x^2 + 12x + 10$

$$x = \frac{-12 \pm \sqrt{12^2 - 4(3)(10)}}{2(3)}$$

$$x = \frac{-12 \pm \sqrt{144 - 120}}{6}$$

$$x = \frac{-12 \pm \sqrt{24}}{6}$$

$$x = \frac{-12 \pm 2\sqrt{6}}{6}$$

$$x = -2 \pm \frac{\sqrt{6}}{3}$$

3. $y = 4x^2 + 7x + 2$

$$x = \frac{-7 \pm \sqrt{7^2 - 4(4)(2)}}{2(4)}$$

$$x = \frac{-7 \pm \sqrt{49 - 32}}{8}$$

$$x = \frac{-7 \pm \sqrt{17}}{8}$$

2. $y = -7x^2 - 8x + 1$

$$x = \frac{8 \pm \sqrt{(-8)^2 - 4(-7)(1)}}{2(-7)}$$

$$x = \frac{8 \pm \sqrt{64 + 28}}{-14}$$

$$x = \frac{8 \pm \sqrt{92}}{-14}$$

$$x = \frac{8 \pm 2\sqrt{23}}{-14}$$

$$x = \frac{4 \pm \sqrt{23}}{-7}$$

4. $y = 16x^2 - 20x + 4$

$$x = \frac{20 \pm \sqrt{(-20)^2 - 4(16)(4)}}{2(16)}$$

$$x = \frac{20 \pm \sqrt{400 - 256}}{32}$$

$$x = \frac{20 \pm \sqrt{144}}{32} = \frac{20 \pm 12}{32}$$

$$x = 1 \quad x = \frac{1}{4}$$

$$5. y = 3x^2 + 4x - 8$$

$$x = \frac{-4 \pm \sqrt{4^2 - 4(3)(-8)}}{2(3)}$$

$$x = \frac{-4 \pm \sqrt{16 + 96}}{6}$$

$$x = \frac{-4 \pm \sqrt{112}}{6}$$

$$x = \frac{-4 \pm 4\sqrt{7}}{6}$$

$$x = \frac{-2 \pm 2\sqrt{7}}{3}$$

$$6. y = 5x^2 - 18x - 8$$

$$x = \frac{18 \pm \sqrt{(-18)^2 - 4(5)(-8)}}{2(5)}$$

$$x = \frac{18 \pm \sqrt{324 + 160}}{10}$$

$$x = \frac{18 \pm \sqrt{484}}{10} = \frac{18 \pm 22}{10}$$

$$x = 4 \quad \& \quad x = -.4$$

$$7. y = 13x^2 - 9x + 1$$

$$x = \frac{9 \pm \sqrt{(-9)^2 - 4(13)(1)}}{2(13)}$$

$$x = \frac{9 \pm \sqrt{81 - 52}}{26}$$

$$x = \frac{9 \pm \sqrt{29}}{26}$$

$$8. y = -2x^2 + 4x + 7$$

$$x = \frac{-4 \pm \sqrt{4^2 - 4(-2)(7)}}{2(-2)}$$

$$x = \frac{-4 \pm \sqrt{16 + 56}}{-4}$$

$$x = \frac{-4 \pm \sqrt{72}}{-4}$$

$$x = \frac{-4 \pm 6\sqrt{2}}{-4}$$

$$x = 1 \pm \frac{3\sqrt{2}}{2}$$