

Solving Using the Quadratic Formula WS

Solve each equation with the quadratic formula. Round values to two decimal places, where necessary.

1) $6v^2 - 9v - 8 = 0$

$a=6, b=-9, c=-8$

$$v = \frac{9 \pm \sqrt{(-9)^2 - 4(6)(-8)}}{2(6)} \quad \sqrt{213}$$

$v \approx \frac{9 + 16.52}{12}$

$v \approx \frac{9 - 16.52}{12}$

$v \approx \frac{25.52}{12}$

$v \approx \frac{-7.52}{12}$

$v \approx 2.13, v \approx -0.63$

2) $-3n^2 - 7n + 16 = 0$

$a=-3, b=-7, c=16$

$$n = \frac{7 \pm \sqrt{(-7)^2 - 4(-3)(16)}}{2(-3)} \quad \sqrt{241}$$

$n \approx \frac{7 + 15.52}{-6}$

$n \approx \frac{7 - 15.52}{-6}$

$\frac{22.52}{-6}$

$\frac{-8.52}{-6}$

$n \approx -3.75, n \approx 1.42$

3) $7r^2 - r - 11 = -6$
 $\quad \quad \quad +6 \quad +6$

$7r^2 - r - 5 = 0$

$a=7, b=-1, c=-5$

$$r = \frac{1 \pm \sqrt{(-1)^2 - 4(7)(-5)}}{2(7)} \quad \sqrt{141}$$

$r \approx \frac{1 + 11.87}{14}$

$r \approx \frac{1 - 11.87}{14}$

$\frac{12.87}{14}$

$\frac{-10.87}{14}$

$r \approx 0.92, r \approx -0.78$

4) $p^2 - 11p + 30 = 12$
 $\quad \quad \quad -12 \quad -12$

$p^2 - 11p + 18 = 0$

$a=1, b=-11, c=18$

$$p = \frac{11 \pm \sqrt{(-11)^2 - 4(1)(18)}}{2(1)} \quad \sqrt{49}$$

$p = \frac{11 + 7}{2}$

$p = \frac{11 - 7}{2}$

$\frac{18}{2}$

$\frac{4}{2}$

$p = 9, p = 2$

- 5) Maile determined the roots of a quadratic equation using the Quadratic Formula. Her work is shown below.

$$5x^2 - 4x + 3 = 12$$

$$5x^2 - 4x - 9 = 0$$

$$x = \frac{-4 \pm \sqrt{(-4)^2 - 4(5)(-9)}}{2(5)}$$

$$x = \frac{-4 \pm \sqrt{196}}{10}$$

$$x = \frac{-4 + 14}{10}$$

$$x = \frac{-4 - 14}{10}$$

$$x = \frac{10}{10}$$

$$x = -\frac{18}{10}$$

$$x = 1, \quad x = -1.8$$

- a) What did she do incorrectly?

She did not take $-(-4)$ for $-b$.

- b) Determine the roots for the given quadratic equation, using the Quadratic Formula. Show your work.

$$x = \frac{4 \pm \sqrt{(4)^2 - 4(5)(-9)}}{2(5)}$$

$$x = \frac{4 \pm \sqrt{196}}{10}$$

$$x = \frac{4 + 14}{10}$$

$$\frac{18}{10}$$

$$x = \frac{4 - 14}{10}$$

$$-\frac{10}{10}$$

$$x = 1.8, \quad x = -1$$