

Name: _____

Date: _____

Pre-Calculus 11 HW 4.4 The Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}, \quad a \neq 0$$

1. Given each quadratic equation, indicate the values of the coefficients "a", "b" and "c":

a) $x^2 + 5x + 6 = 0$ $a = 1, \quad b = 5, \quad c = 6$	b) $12x^2 + 7x - 3 = 0$ $a = 12, \quad b = 7, \quad c = -3$	c) $-2x^2 - 7x + 5 = 0$ $a = -2, \quad b = -7, \quad c = 5$
d) $4x^2 = 13x - 8$ $4x^2 - 13x + 8 = 0$ $a = 4, \quad b = -13, \quad c = 8$	e) $x(7 - 8x) = 10$ $-8x^2 + 7x - 10 = 0$ $a = -8, \quad b = 7, \quad c = -10$	f) $x(x + 2) = 6 - (x - 3)(2x + 1)$ $x^2 + 2x = 6 - (2x^2 - 6x + x - 3)$ $3x^2 - 3x - 9 = 0$ $a = 3, \quad b = -3, \quad c = -9$

2. Solve for "x" for each of the following by using the quadratic formula:

a) $x^2 - 5x + 6 = 0$ $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $\frac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(6)}}{2(1)}$ $\frac{5 \pm \sqrt{1}}{2}$ $x = 3, 2$	b) $3x^2 - x + 1 = 3$ $3x^2 - x - 2 = 0$ $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $\frac{-(-1) \pm \sqrt{(-1)^2 - 4(3)(-2)}}{2(3)}$ $\frac{1 \pm \sqrt{25}}{6}$ $x = 1, -\frac{2}{3}$	c) $2x^2 - 3x - 1 = 0$ $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $\frac{-(-3) \pm \sqrt{(-3)^2 - 4(2)(-1)}}{2(2)}$ $\frac{3 \pm \sqrt{17}}{4}$ $x = 1.78, -0.28$
d) $-0.5x^2 + 4x + 12 = 0$	e) $-0.5x^2 + 3x = 6$	f) $-3x^2 = 12x - 5$

$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $\frac{-4 \pm \sqrt{4^2 - 4(-0.5)(12)}}{2(-0.5)}$ $\frac{-4 \pm \sqrt{40}}{-1}$ $x = 10.32, -2.32$	$-0.5x^2 + 3x - 6 = 0$ $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $\frac{-3 \pm \sqrt{3^2 - 4(-0.5)(-6)}}{2(-0.5)}$ <p><i>Error</i></p>	
<p>g) $3x(2x - 6) = 8$</p>	<p>h) $\frac{4x^2}{3} = 4x - 2$</p>	<p>i) $x^2 - 2 = \frac{-7x}{2}$</p>
<p>j) $2x^3 - 5x^2 + 7x = 0$</p>	<p>k) $2x^2 + 6x - 8 = 7x^2 - 2x$</p>	<p>l) $2(2x - 1)^2 + 9(2x - 1) + 7 = 0$</p>

3. Under what conditions will the equation have no solutions? $ax^2 + bx + c = 0$ Explain why

4. Under what conditions will the equation have only one solution? $ax^2 + bx + c = 0$ Explain why

5. The revenue a company makes for selling shoes is given by the equation: $R = -8p^2 + 1200p$, where “ R ” is the revenue and “ p ” is the price in dollars. At what price should the company sell their shoes to generate a revenue of \$400,000?

6. Here are the steps that John used to solve the equation: $12x^2 - 7x - 3 = 0$. Find the mistakes:

$$L_1 : x = -7 \pm \frac{\sqrt{49^2 - 4(12)(3)}}{2(12)}$$

$$L_4 : x = -7 \pm 1.9794955..$$

$$L_2 : x = -7 \pm \frac{\sqrt{2401 - 144}}{24}$$

$$L_5 : x_1 = -7 + 1.9794955.. = -5.0205...$$

$$L_3 : x = -7 \pm \frac{\sqrt{2257}}{24}$$

$$L_6 : x_2 = -7 - 1.9794955.. = -8.9794955...$$