

Algebra 1
 Day 7 - Solving by Quadratic Formula
 Practice Assignment

Unit 9 - Quadratic Equations

Key 3/4/2020
 Practice

Name: _____

Directions: Find the discriminant and tell the number of solutions. Then solve each of the following equations using the Quadratic Formula.

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

1. $x^2 + 4x - 2 = 0$

$(4)^2 - 4(1)(-2) \rightarrow 24$

$\frac{-4 \pm \sqrt{24}}{2(1)} \rightarrow \frac{-4 \pm 2\sqrt{6}}{2}$

$= -2 \pm \sqrt{6}$

$a=1$
 $b=4$
 $c=-2$

Discriminant: 24
 # of Solutions: 2
 X = $-2 \pm \sqrt{6}$

2. $4x^2 - 8x + 3 = 0$

$(-8)^2 - 4(4)(3)$

$\frac{8 \pm \sqrt{16}}{2(4)} \rightarrow \frac{8 \pm 4}{8}$

$\frac{8+4}{8} \rightarrow \frac{3}{2}$ $\frac{8-4}{8} \rightarrow \frac{1}{2}$

Discriminant: 16
 # of Solutions: 2
 X = $\frac{3}{2}, \frac{1}{2}$

3. $5x^2 - 10x + 18 = 13$

$\frac{-13 - 13}{5x^2 - 10x + 5 = 0}$

$(-10)^2 - 4(5)(5) \rightarrow 0$

$x = \frac{10 \pm \sqrt{0}}{2(5)}$

$x = \frac{10 \pm 0}{10} \rightarrow 1$

Discriminant: 0
 # of Solutions: one
 X = 1

4. $6x^2 = -4x - 10$

$\frac{+4x + 4x + 10}{6x^2 + 4x + 10 = 0}$

$(4)^2 - 4(6)(10) = -224$

Discriminant: -224
 # of Solutions: none
 X = no real solutions

$$5. 2x^2 - 7x - 13 = -10$$

$$\frac{\quad +10 \quad +10}{2x^2 - 7x - 3 = 0}$$

$$(-7)^2 - 4(2)(-3)$$

$$\rightarrow 73$$

Discriminant: 73

of Solutions: 2

X =

$$\frac{7 \pm \sqrt{73}}{4}$$

$$6. 8x^2 + 4x + 16 = -x^2$$

$$\frac{\quad +x^2 \quad +x^2}{9x^2 + 4x + 16 = 0}$$

a=9

b=4

c=16

$$(4)^2 - 4(9)(16)$$

$$\rightarrow -560$$

Discriminant: -560

of Solutions: none

X =

no real solutions

$$x = \frac{7 \pm \sqrt{73}}{2(2)} \rightarrow$$

$$\frac{7 \pm \sqrt{73}}{4}$$

Error Analysis:

Describe and correct the error Jaya made when attempting to solve using the quadratic formula.

Problem: $7x + 2x^2 - 4 = 3$

Jaya's Process:

$7x + 2x^2 - 4 = 3$

$7x + 2x^2 - 7 = 0$

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

$$\frac{-2 \pm \sqrt{200}}{14}$$

$$x = \frac{-2 \pm 10\sqrt{2}}{14}$$

$$x = \frac{-1 + 5\sqrt{2}}{7} \text{ and } \frac{-1 - 5\sqrt{2}}{7}$$

*Did not put in standard form

Correct Process:

$7x + 2x^2 - 4 = 3$

$2x^2 + 7x - 7 = 0$

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

$$\frac{-7 \pm \sqrt{105}}{4}$$

Decision Making:

I have a non factorable trinomial where a is 1 and b is odd, which method am I going to use?

Quadratic formula

I have a factorable trinomial where a is NOT 1 and b is odd, which method am I going to use?

factoring

I have a non factorable trinomial where a is 1 and b is even, which method am I going to use?

Completing the square

I have a binomial squared and its equal to some number, which method am I going to use?

Square root