Unit 5 Lesson 6: Quadratic Formula

WARM UP

1. What is the Standard Form of a Quadratic? _____

List ABC for each Quadratic Equation:

2. $5x^2 - 7x + 3$

3. $-3x^2 + 4x - 9$

4. Factor: $2x^2 - 7x + 10$

NOTES

QUADRATIC FORMULA

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

*****WHEN DO YOU USE THE QUADRATIC FORMULA?**

EXAMPLES

a) $2x^2 - 10x + 7$

b) $3x^2 - 8x - 6$

Quadratic Formula Practice

Use the quadratic formula to solve each equation. Leave your answer in radical form.

1) $2x^2 + 6x + 3 = 0$

2) $x^2 + 9x - 13 = 0$

3) $x^2 = 3x + 2$

4) $3x^2 + 4x - 5 = 0$

5) $3x^2 - 5x - 12 = 0$

6) $2x^2 = 3x + 7$

7) $5x^2 + x - 3 = 0$

8) $5x^2 - 2x - 7 = 0$

9) $x^2 = 8$

DISCRIMINANT

Quadratic equations can have real or complex solutions. You can determine the **type** and **number** of solutions by finding the discriminant.

The ***discriminant*** of a quadratic equation in the form $ax^2+bx+c=0$ is the value of the expression b^2-4ac.

Value of the Discriminant	Type and Number of Solutions for $ax^2+bx+c=0$	Examples of Graphs of $y=ax^2+bx+c$
$b^2-4ac>0$		
$b^2-4ac=0$		
$b^2-4ac<0$		

Example: Using the Discriminant

Determine the type and number of solutions of each equation.

(a) $x^2+4x+5=0$ (b) $4x^2+20x=-25$ (c) $2x^2+7x-15=0$

Discriminant Practice

Find the value of the discriminant of each quadratic equation.

1) $6p^2 - 2p - 3 = 0$

2) $-2x^2 - x - 1 = 0$

Find the discriminant of each quadratic equation then state the numberof real and imaginary solutions.

7) $9n^2 - 3n - 8 = -10$

8) $-2x^2 - 8x - 14 = -6$

9) $9m^2 + 6m + 6 = 5$

10) $4a^2 = 8a + 4$

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Graded Practice Unit 5 Lesson 6

Solve each equation with the quadratic formula.

1) $2n^2 - n - 4 = 2$

2) $b^2 - 4b - 14 = -2$

3) $8n^2 - 4n = 18$

4) $8a^2 + 6a = 5$

5) $10x^2 - 8 = x$

6) $n^2 = 9n - 20$

Find the discriminant of each quadratic equation then state the numberof real and imaginary solutions.

7) $-9b^2 = -8b + 8$

8) $-x^2 - 9 = 6x$

9) $-4r^2 - 4r = 6$

10) $7b^2 - 6b + 3 = 5b^2$