Unit #8 Take Home Test

Solving Methods for Polynomial Equations: Factoring, Completing the Square, and Quadratic Equation

#1 Define each of the following terms in your own words (an if applicable, when to use them):

1. Factor

2. Prime Factorization

3. GCF

4. Difference of Squares

5. Perfect Square Trinomial

6. Prime Polynomial

7. Factored Form

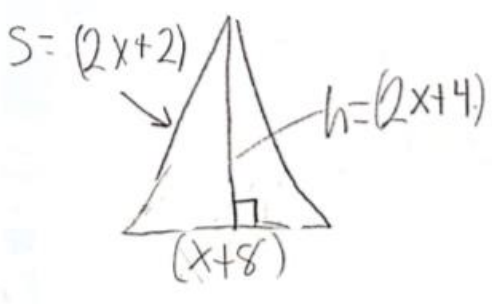
8. Standard Form

9. Quadratic Equation

10. Completing the Square

#2 Define what the difference of squares is. Create your own difference of squares polynomial. Then factor it.

#3 Our backyard has an area of 91 ft^2. We have a triangular backyard. Use the following information to solve for x.



#4 Factor the following and solve for x. Explain which factoring method you would use to solve for x and why you would use that method specifically. Use the easiest methods first (normal factoring and completing the square, and then quadratic equation).

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

2. $x^2 + 6x - 11 = 0$

3. $2x^2 - x + 5 = 0$

Unit #8 Test In-Class Part 1

Solving Methods for Polynomial Equations: Factoring, Completing the Square, and Quadratic Equation

#1 Factor the following expression:

25x-100y

#2 Solve the following by first combining the terms inside the parentheses:

5(2+4)=?

Distribute the multiplication over the addition first and then solve:

5(2+4)=?

Compare the two methods for solving.

#3 Factor a^2+2ab+b^2

What is unique about these factors?

How else can they be written (consolidated/combined)?

#4 If possible, factor the following polynomials with the form (dx+e)(fx+g) where d,e,f, and g are rational constants. If this is not possible, explain why.

x^2+4x+4=

x^2-3x+8=

Check your work by using the quadratic equation.

#5 Factor the following:

1. $r^2 - 15r + 56$

2. $m^2 - 3m - 10$

3. $4 - 324m^2$

Unit #8 Test In-Class Part 2

Solving Methods for Polynomial Equations: Factoring, Completing the Square, and Quadratic Equation

#1 If $x^2 - x - 6 = 0$, then what is x? Explain your reasoning. Explain each step to solve for x. Factor using any method.

a. -2 or 3
b. -1 or 6
c. 1 or -6
d. 2 or -3

Explain why there are two x values as the solution.

#2 Write the Quadratic Equation:

Which values in the following polynomial correspond to a, b, and c?

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

a=

b=

c=

#3 Explain what happened between these two steps and why that solving tactic was used.

Step 1 $x^2 - 6x = 16$

Step 2 $x^2 - 6x + 9 = 25$

Finish Factoring the left-hand side.

#4 Solve by completing the square. Use the form $x^2 \pm bx + \left(\frac{b}{2}\right)^2 => \left(x \pm \frac{b}{2}\right)^2$

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

#5 A ball was thrown in the air. The curve of the ball can be expressed by $D(x) = -\frac{x^2}{400} + \frac{x}{10}$. Find the roots and explain what they represent in the context of the problem. Use the following graph (not drawn to scale)