

Fifth Six Weeks Extra Credit

For correct completion of this assignment, you will receive a 100 homework grade in the fifth six weeks.

Directions:

1. Watch the video at: <http://goo.gl/6uqhaQ>
2. Copy down the notes from this video onto the next two pages.
3. Complete the homework on the next two pages. You must show all of your work to receive credit. **Simply writing the answers that are shown in the key will not allow you to earn credit for this assignment.**
4. Verify answers with the key on the last page.

Due Date: Friday, March 6, 2015

Perfect Square Trinomials:

Definition: A trinomial is a perfect square if:

- _____
- _____

Perfect Square Trinomial Form:

- $a^2 + 2ab + b^2 = (\text{ })(\text{ }) = (\text{ })$
- $a^2 - 2ab + b^2 = (\text{ })(\text{ }) = (\text{ })$

Determine whether each trinomial is a perfect square. If so, factor. If not, explain.

1. $4x^2 - 4x + 1$
2. $81x^2 + 90x + 25$
3. $9x^2 - 15x + 64$
4. $x^2 + 4x + 4$
5. $x^2 - 14x + 49$

Now, let's apply this to a real world problem.

A rectangular piece of cloth must be cut to make a tablecloth. The area needed is $16x^2 - 24x + 9$ inches². Write an expression for the perimeter of the cloth.

Difference of Two Squares:

Definition: A polynomial is a difference of two squares if:

- _____
- _____

Difference of Two Squares Form:

- $a^2 - b^2 = (\text{ })(\text{ }) = (\text{ })$

Determine whether each binomial is a difference of two squares. If so, factor. If not, explain.

1. $1 - 4x^2$

2. $3p^2 - 9q^4$

3. $x^4 - 25y^6$

4. $100x^2 - 4y^2$

5. $p^8 - 49q^6$

Determine whether the trinomial is a perfect square. If so, factor. If not, explain.

1. $36x^2 - 12x + 1$
2. $16x^2 - 40x + 25$

Determine whether each binomial is a difference of two squares. If so, factor. If not, explain.

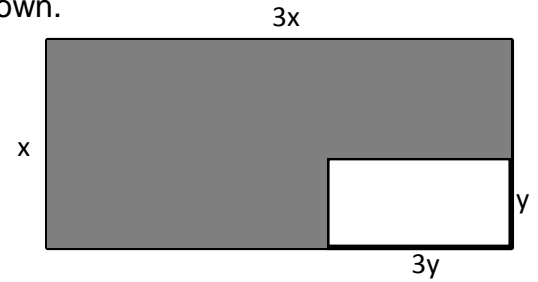
3. $25m^2 - 16n^2$
4. $49p^{12} - 9q^6$

Factor each polynomial using the rule for perfect-square trinomials or the rule for a difference of two squares. Tell which rule you used.

5. $100x^2 - 81y^2$
6. $x^{14} - 144$

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7. You are given a sheet of paper and told to cut out a rectangular piece of an area of $(4x^2 - 44x + 121)$ mm². The dimensions of the rectangle have the form $ax - b$, where a and b are whole numbers. Find an expression for the perimeter of the rectangle you cut out. Find the perimeter when $x=41$ mm.
 8. The area of a square is represented by $25z^2 - 40z + 16$.
 - a. What expression represents the length of a side of the square?
 - b. What expression represents the perimeter of the square?
 - c. What are the length of a side, the perimeter, and the area of the square when $z=3$?

9. A small rectangle is drawn inside a larger rectangle as shown.



a. What is the area of each rectangle?

b. What is the area of the shaded region?

c. Factor the expression for the area of the shaded region. (*Hint: First factor out the common factor of 3 and then factor the binomial.*)

10. Two students factored $25x^4 - 9y^2$. Which is incorrect? Explain the error.

Student A:

$$25x^4 - 9y^2$$
$$(5x - 3)(5x + 3)$$

Student B:

$$25x^4 - 9y^2$$
$$(5x^2 - 3y)(5x^2 + 3y)$$

Homework Key

1. Yes $(6x - 1)^2$
2. Yes $(4x - 5)^2$
3. Yes $(5m + 4n)(5m - 4n)$
4. Yes $(7p^6 + 3q^3)(7p^6 - 3q^3)$
5. $(10x + 9y)(10x - 9y)$
6. $(x^7 + 12)(x^7 - 12)$
7. $8x - 44$; 284 mm
8. a. $5z - 4$; b. $20z - 16$; c. 11 units, 44 units, 121 units^2
9. a. $3x^2$, $3y^2$; b. $3x^2 - 3y^2$; c. $3(x + y)(x - y)$
10. Student A is incorrect because...