Monday 8/12/19

1. Take out HW/Cal, Grab Calc.
2. Pick up Notes, do warm-up
3. Review/Practice
4. QUIZ
5. Factoring Special Cases Notes
\[ 3x^2 - 42x + 135 \rightarrow \frac{3(x^2 - 14x + 45)}{x^2 - 5x - 9(x - 5)} \]
\[ = \frac{3(x - 9)(x - 5)}{(x - 5)(x - 5)} \]
\[ = 3(x - 9) \]
**Topic:** Factoring Special Cases

**What am I learning today?**

- **Warm-Up**
  - Factoring Trinomials
  - Factor the following trinomials completely:
    1. $x^2 + 19x + 90$
    2. $2x^2 - 23x + 45$
    3. $9x^2 + 13x^2 + 4x$
    

  - $(x + 9)(x + 10)$
  - $(2x - 5)(2x - 5)$
  - $(9x^2 + 13x + 4)$

- **Vocabulary**
  - Difference of Squares
  - Identified by: ____________

  - **Requirements**
    1. ____________ terms
    2. ____________ sign between them
    3. ____________ must be perfect squares.

  - **Steps:**
    1. Factor out any GCF
    2. Factor the product into $(a - b)(a + b)$

  - **Examples**
    1. $a^2 - 64$
    2. $9x^2 - 100y^2$
    3. $3t^2 - 48$

    - $\sqrt{a^2} = a$
    - $\sqrt{64} = 8$
    - $(a + 8)(a - 8)$
    - $(3t + 4)(t - 4)$

  - **You Try**
    1. $a^2 - 121$
    2. $16x^2 - 169y^2$
    3. $25t^2 - 4$
    4. $9 - n^2$
    5. $n^2 + 36$
    6. $2n^2 - 50$

    - **Not Factorable**
      - $2(n^2 - 25)$
      - $2(n+5)(n-5)$
Wednesday 8/14/19

1. Grab Calc, Take out HW/Calendar
2. Warm-Up: p. 7 & 11 in your INB
3. Finish Notes
4. Finish INB, Test Review
**Topic:** Factoring Special Cases

**Vocabulary**

**Sum of Perfect Cubes**

**Difference of Perfect Cubes**

**Identified by:** \( \frac{a + b}{(sum)} \) or \( \frac{a - b}{(difference)} \)

**Requirements**

1. \( \frac{2}{2} \) terms
2. \( + \) or \( - \) sign between them
3. Both must be perfect cubes.

**Steps:**

1. Factor out any GCF
2. For SUM of cubes, factor the product into:
   \[ a^3 + b^3 = (a + b)(a^2 - ab + b^2) \]
3. For DIFFERENCE of cubes, factor the product into:
   \[ a^3 - b^3 = (a - b)(a^2 + ab + b^2) \]

***HELPFUL HINTS***

We can remember the signs by using the word SOAP:

S – same sign
O – opposite sign
A – always
P – positive

We can remember the terms by using:

“Square, Multiply, Square”

**Examples**

<table>
<thead>
<tr>
<th>Binomial</th>
<th>Trinomial</th>
</tr>
</thead>
<tbody>
<tr>
<td>( a^3 + 8 = )</td>
<td>( x^3 + 27 = )</td>
</tr>
<tr>
<td>( (x + 2)(x^2 - 2x + 4) )</td>
<td>( (2x - 3)(4x^2 + 6x + 9) )</td>
</tr>
<tr>
<td>( a^3 + 8x^3 = 2x^2 )</td>
<td>( 2x^3 - 27 = )</td>
</tr>
<tr>
<td>( \sqrt[3]{2x^2} = 2x )</td>
<td>( (2x - 3)(4x^2 + 6x + 9) )</td>
</tr>
<tr>
<td>( b = \sqrt[3]{81} = 3 )</td>
<td>( 2(2x^3 - 1) )</td>
</tr>
</tbody>
</table>

**You Try**

1. \( 8x^3 + 125 = \)
   \[ (2x + 5)(4x^2 - 10x + 25) \]
2. \( 54x^3 - 2 = \)
   \[ 2(27x^3 - 1) \]
   \[ \frac{2(3x - 1)(9x^2 + 3x + 1)}{a^3 - ab + b^2} \]

**Summary**

Summarize the lesson in your own words
Alg 2  Unit 1 Test 1 Review  

I. Simplify the radicals. Be sure to leave them in EXACT form.

1) $\sqrt{12x^5y^2}$ 
2) $\sqrt{200}$ 

3) $\sqrt{-50}$ 
4) $\sqrt{243}$ 

II. Complex Numbers: Simplify the following. Put all answers in standard form.

5) $-6i(11+2i)$ 
6) $(2i + 8) + (3i - 4)$ 

7) $(3-2i)(-9+2i)$ 
8) $(7-3i)(7+3i)$ 

9) $(2i - 4) - (i + 7)$ 
10) $\frac{2-3i}{3+5i}$
III. Factor completely. Be sure to use the M-A chart for trinomials.
11) \( x^2 + 5x - 14 \)  
12) \( x^2 - 100 \)

13) \( 5p^2q + 10pq \)  
14) \( 3x^3 - 27x^2 + 54x \)

15) \( x^2 - 16x + x - 16 \)  
16) \( 9x^2 - 49 \)

17) \( 10x^2 + 13x - 3 \)  
18) \( 3x^2 + 26x + 16 \)

19) \( 36x^2 - 49 \)  
20) \( 8x^3 - 125 \)