Write your questions and thoughts here!

6.1 Factoring Review

Name:_____

The types of factoring we will review today:

1. Factoring out the GCF.
2. Quadratics
3. Difference of Squares
4. Quadratic Form
5. Perfect Square Trinomial
6. Difference of Cubes
7. Sum of Cubes
8. Factor by Grouping

Zero Product Property:

$ab = 0$

Example: $3x(2x - 8)(4x + 5) = 0$

Greatest Common Factor (un - distribute):

1. $6x^3 - 15x^2 - 3x$	2. $-2w^2 - 100$	3. $7x^3y^2z + 21x^2y^2z^3 + 14xy^2z^2$

Quadratics:

4. $-2m^2 + 2m + 112$	5. $9r^2 - 66r + 105 = 0$

Difference of Squares:

5. $t^5 - 16t = 0$	6. $81x^2 - 100y^8$

Quadratic Form:

7. $-3x^4 + 24x^2 + 27 = 0$	8. $a^4 - 2a^2b^2 - 15b^4$

Write your questions and thoughts here!

6.1 Factoring Review

Perfect Square Trinomial:

9. $144x^2 + 216x + 81 = 0$	10. $-98x^2 + 168x - 72$

Difference of Cubes:

11. $x^3 - 8$	12. $64x^3 - 343y^3$

*We wouldn't solve these by factoring! Why not?

Sum of Cubes:

13. $125x^3 + 1$	14. $27x^3 + 216y^3$

Factor by Grouping:

15. $56v^3 - 49v^2 + 48v - 42$	16. $6x^3 + 5x^2 - 24x - 20 = 0$
17. $20xy + 32x^2 + 140by + 224bx$	18. $42a^2d^2c + 147a^2d^3 - 36xd^2c - 126xd^3$

Now summarize what you learned!

Pre-Calculus Name_____

6.1 Practice - Factoring Review

Factor each completely. If it is an equation, solve by factoring.

1) $6p^2 - 24p - 192 = 0$

2) $3r^3 - 3r^2 - 6r = 0$

3) $5p^2 - 34p + 24$

4) $5x^2 - 8x + 3$

5) $15n^2 - 111n + 126 = 0$

6) $7n^2 - 25n - 12$

7) $-21n^2 + 138n - 72$

8) $7x^2 + 13x - 2$

9) $x^2 - 16$

10) $n^2 - 4$

11) $k^2 + 16$

12) $v^2 + 25$

13) $9v^2 - 16 = 0$

14) $175a^2 - 63$

15) $5x^4 + 30x^2 - 200$

16) $-x^4 + 3x^2 - 2$

17) $30u^6 + 6u^3 - 108$

18) $21x^8 - 117x^4 - 210$

19) $4a + 32a^4$

20) $64x^3 + 125$

21) $2x^4 - 128x = 0$

22) $125a - 216a^4$

23) $42n^3 + 48n^2 - 49n - 56$

24) $7x^3 + x^2 + 28x + 4 = 0$

25) $12xy - 16x^2 + 21y - 28x$

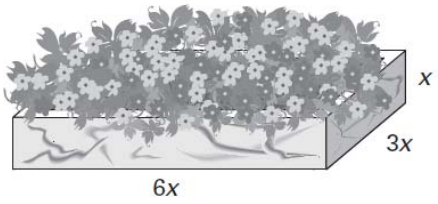
26) $120mn - 200m^2 + 24n - 40m$

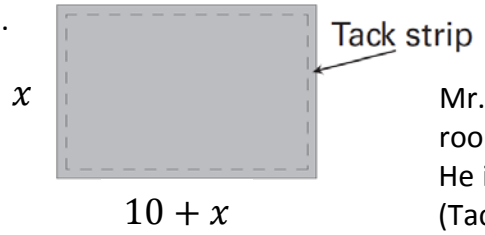
27) $60m^3n - 72m^3 + 75bm^2n - 90bm^2$

28) $12xy + 14x - 30ry - 35r$

6.1 Application and Extension

1. You are designing a marble planter for a city park. You want the length of the planter to be six times the height, and the width to be three times the height. The sides should be one foot thick. Because the planter will be on the sidewalk, it does not need a bottom. What should the outer dimensions of the planter be if it is to hold 4 cubic feet of dirt?



2. 

Mr. Brust's dog has gone "number 1" too many times on their living room carpet and decides to have a new wall-to-wall carpet installed. He is charged for 375 square feet of carpet and 90 feet of tack strip. (Tack strip is used along the perimeter to secure the carpet in place. It's not called tack because he's tacky!) Do you think these figures are correct? Explain your answer.

3. A rectangular sheet of material can be used to form a box by cutting out square inches from all four corners and then folding up the sides. Each square that is removed has a width x. The possible volume of this box is given by $V(x) = x^3 - 51x^2 + 630x$.
   a. Factor this expression, and use the factors along with the graph (on a calculator) to determine the relevant domain for this scenario. (x is measured in inches). In other words, how wide can each cutout square be?

   b. How large should the cut out be to give the box the largest possible volume?

   c. What are the dimensions of the box from part b?

   d. Based on the factors, what is the length and width of the original piece of material? (Hint: draw a picture!)