Algebra II – Mrs. Tilus This fabulous review belongs to: Mrs. Tilus

Unit 4 Review- **Unit 4 Test: December 20th /21st**

1. (4pts) **Simplify** and **state the degree** of the polynomial below.

$4(2ab^2 - 3bc + 5a^2b^2c) - (6ab^2 + 2bc - a^2b^2c)$

$8ab^2 - 12bc + 20a^2b^2c - 6ab^2 - 2bc + a^2b^2c$

$2ab^2 - 14bc + 21a^2b^2c$ Degree: 5

2. Simplify by applying the laws of exponents.

a) $(-5x^4y^3)^2(3xy^5) = (25x^8y^6)(3xy^5)$

$= 75x^9y^{11}$

b) $(2c^2d^3)^3 = 8c^6d^9$

c. $x(x^{m-1})(x^{2m}) = x^{1+m-1+2m}$

$= x^{3m}$

d. $(c^n)^4(c^2)^n = c^{4n} \cdot c^{2n}$

$= c^{4n+2n}$

$= c^{6n}$

3. Multiply the polynomials, and simplify your answer.

a) $(3x-4)^2 \rightarrow (3x-4)(3x-4)$

$9x^2 - 12x - 12x + 16$

$9x^2 - 24x + 16$

b) $x^2(x-3)(x+3)$

$x^2(x^2 + 3x - 3x - 9)$

$x^2(x^2 - 9)$

$x^4 - 9x^2$

4. Write each term as a **product of prime numbers and variables** by using a factor tree.
Then find the GCF and LCM of the following monomials. Make sure to show factor trees and **simplify** your answers.

$39p^2q^3r^2$

3 · 13

$78p^2q^2r^3$

2 · 3 · 13

GCF= $39p^2q^2r^2$

LCM= $78p^2q^3r^3$

OR $\frac{3 \cdot 13 \cdot p \cdot p \cdot q \cdot q \cdot q \cdot r \cdot r}{3 \cdot 13 \cdot p^2 \cdot q^3 \cdot r^2}$ $\frac{2 \cdot 3 \cdot 13 \cdot p \cdot p \cdot q \cdot q \cdot r \cdot r \cdot r}{2 \cdot 3 \cdot 13 \cdot p^2 \cdot q^2 \cdot r^3}$

GCF: $3 \cdot 13 \cdot p^2 \cdot q^2 \cdot r^2$

LCM: $2 \cdot 3 \cdot 13 \cdot p^2 \cdot q^3 \cdot r^3$

SHOW ALL WORK TO RECEIVE FULL CREDIT

5. Use the appropriate method to factor the following polynomials. (ONE is prime)

a. $v^2 - 11v - 60$

-60, 1
-30, 2
-20, 3
-15, 4

$(v-15)(v+4)$

b. $5x^2 - 21x - 20$ $= -100$

$5x^2 - 25x + 4x - 20$

$5x(x-5) + 4(x-5)$

$(x-5)(5x+4)$

c. $25x^2 - 144y^2$

$(5x-12y)(5x+12y)$

d. $8a^3 + 27$ $a = 2a$ $b = 3$

$(2a+3)(4a^2 - 6a + 9)$

e. $u^2 - 8u - 12$

-12, 1
-6, 2
-4, 3

Prime

f. $10x^3 + 15x^7 - 35x^5$

$5x^3(2 + 3x^4 - 7x^2)$

$5x^3(3x^4 - 7x^2 + 2)$

g. $6x^2 + 13x + 6$ $= 36$

9, 4

$6x^2 + 9x + 4x + 6$

$3x(2x+3) + 2(2x+3)$

$(2x+3)(3x+2)$

h. $\frac{2a^3}{2a} - \frac{162a}{2a}$

$2a(a^2 - 81)$

$2a(a-9)(a+9)$

6. Solve each of the following polynomial equations.

a) $x^2 - 3x - 10 = 0$

$(x-5)(x+2)=0$

$x-5=0 \quad x+2=0$

$x=5 \quad x=-2$

b) $x^2 - 12 = 4x$

$-4x \quad -4x$

$x^2-4x-12=0$

$(x-6)(x+2)=0$

$x-6=0 \quad x+2=0$

$x=6 \quad x=-2$

c) $(x-4)^2 = 2x$

$(x-4)(x-4)-2x=0$

$x^2-8x+16-2x=0$

$x^2-10x+16=0$

$(x-2)(x-8)=0$

$x-2=0 \quad x=2 \quad x-8=0 \quad y=8$

d) $(x+1)(x-5)=7$

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

$x^2-4x-12=0$

$(x-6)(x+2)=0$

$x-6=0 \quad x+2=0$

$x=6 \quad x=-2$

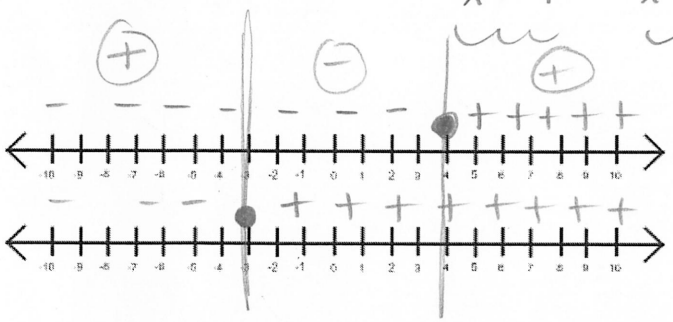
7. Find and graph the solution set of $x^2 - x - 12 \leq 0$.

$(x-4)(x+3) \leq 0$

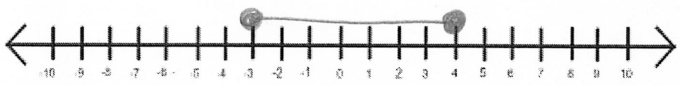
$x-4=0 \quad x+3=0$

$x=4 \quad x=-3$

neg product +/-



Solution set: $-3 \leq x \leq 4$



8. A rectangular residential lot with area 7475 m^2 is 50 m longer than it is wide. Find the dimensions of the lot.

$A = l \cdot w \Rightarrow 7{,}475 = (w+50)w$

$-299+25=-274$

7475	$w = w$
$l = w+50$	

$7{,}475 = w^2 + 50w$

$-7475 \quad -7475$

$0 = w^2 + 50w - 7475$

$0 = (w+115)(w-65)$

$w+115=0 \quad w-65=0$

$w=-115 \quad w=65$

$w = 65$ m

$l = 65+50 \quad l = 115$ m