

**MATH 110**      **Test 3 (sec. 4.3 - 5.6)**

**Show all your work. No work no credit**

1. (2 each) Factor out the GCF, including -1, if the leading term is negative.

a)  $11x - 121$

b)  $15xy^3(2x - y + 3z) + 10xy^2(2x - y + 3z)$

c)  $2x^2(x+5)+(x+5)$

d)  $-3x^2y^4-6x^3y^4-9x^2y^3$

2. (2 each) Factor by GROUPING.

a)  $bx + b + cx + c$

b)  $3x + 3y - bx - by$

c)  $10a^2-5az+2a+z$

d)  $ar^2-brs+ars-br^2$

3. (2 each) (Do 18 out of 20. More is Extra credit) Factor completely, if possible.

a)  $x^2 - 100$

b)  $64 + 49t^2$

c)  $64a^2 - 1$

d)  $3x^2 - 147$

e)  $x^2 + 5x + 6$

f)  $9x^5 - 16x$

g)  $(x + 2y)^2 - 25$

h)  $2xz + 10x + z + 5$

i)  $12x^2 - 47x + 11$

j)  $4b^2 - 17bc + 4c^2$

k)  $a^2 + 4ab + 3b^2$

l)  $y^2 - 9y + 9$

m)  $y^2 + 4y + 4 - x^2$

n)  $x^3 - 125$

o)  $16x^3 - 52x^2 + 22x$

p)  $a^3 + 27$

q)  $256p^4 - 625q^4$

r)  $3x^2 + 6 + x$

s)  $-y^3 + 13y^2 - 12y$

t)  $x^4y^3 - x^4$

4. (2 each) Multiply and simplify.

a)  $(2xy^2t)(-3x^2yt^2)$

b)  $7t^3(-t^2 + 2t + 1)$

c)  $(x - 5)(x - 2)$

d)  $(y - 3)^2$

e)  $(3x + 1)(x^2 - x - 9)$

f)  $3(t + 4)(t - 4)$

5. (3 each) Solve each equation.

a)  $z(z + 2) = (z + 4)(z - 4)$

b)  $(a + 2)^2 = (a - 2)^2$

6. (3 each) Do each division. Write your answer with no negative exponents.

a)  $\frac{5x^2y - 10xy^2 - 3y}{5xy}$

b)  $\frac{6x^3 - 9x^2 - 3x}{3x^2}$

7. (3 each) Divide using **Long Division**:

a)  $\frac{x^2 + x - 6}{x + 3}$

b)  $\frac{x^3 - x^2 - 10x - 10}{x - 4}$

c)  $\frac{x^3 + 125}{x + 5}$

d)  $\frac{-48y^2 + 10xy + 3x^2}{3x - 8y}$

8.(2 pts) One light year is approximately  $9.46 \times 10^{15}$  meters. Write this number in standard notation.

9. (3 pts) Classify  $3x^{14}y^2 - 5x^{13}y^4$  as a monomial, binomial, or trinomial and give its degree.

10. (3 pts) Complete the table of values.

$x$	$x^2 - 8$
-2	
-1	
0	
1	
2	

11. (2 each) Add/Subtract and simplify:

a)  $(-2x^2 - x - 1) + (3x^2 - 2x + 8)$

b)  $-4(x - 8) - (7x - 2)$

12. (5 pts. **BONUS**) Factor Completely:  $x^8y^8 - 256$