

DO NOT TURN THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO

- ❖ Write your name below on the space provided.
- ❖ This test has a total of 4 pages.
- ❖ Work the problem in the space provided. If you need more space, write on the back of the test. Be sure to label the test as to which problem is on the back.
- ❖ To insure maximum credit, show your work. In general, full credit will not be given for unsupported answers.
- ❖ Be sure to write neatly in pencil. If I cannot read what was written, do not expect the problem to be graded.
- ❖ If you finish early, go over the test again.

Good luck!

Number	Maximum	Score
1	2	
2	6	
3	6	
4	18	
5	32	
6	5	
7	19	
8	6	
9	6	
Total	100	

Name \_\_\_\_\_

CIRCLE FINAL ANSWERS

1) (2 points) What does it mean to factor?

2) (3 points each) Find the GCF of the following:

a)  $p^3q^4, p^2q^4, p^8q^3$

b)  $25x^2, 125x^4y, 50x^3y^2$

3) (3 points each) Factor out the GCF from the following:

a)  $16x^2 - 18x^3 + 20x$

b)  $70x^5y^3 - 20x^4y^3 + 30x^3y^3$

4) (3 points each) Factor completely:

a)  $x^2 + x - 12$

b)  $x^2 - x - 56$

c)  $14x(2x+5) - 5(2x+5)$

d)  $x^3 - 3x^2 + x - 3$

e)  $6x^2 + 2xy + 21x + 7y$

f)  $-x^2 + x + 20$

5) (4 points each) More factoring completely. Woo!

a)  $3x^4 - 3x^3 - 60x^2$

b)  $-2p^2q^2 - 4pq^2 - 2q^2$

c)  $3xy^2 - 48x$

d)  $8 - x^3$

e)  $x^4 - 16$

f)  $x^5 - 4x^3 - 8x^2 + 32$

g)  $x^4 - 20x^2 + 64$

h)  $16x^3 - 16x^2 - 12x$

6) (1 point each) Match the factored form to the expanded form:

\_\_\_\_\_  $(a + b)^2$

A:  $a^2 + 2ab + b^2$

\_\_\_\_\_  $(a - b)^2$

B:  $a^3 + b^3$

\_\_\_\_\_  $(a + b)(a - b)$

C:  $a^2 - 2ab + b^2$

\_\_\_\_\_  $(a + b)(a^2 - ab + b^2)$

D:  $a^2 - b^2$

\_\_\_\_\_  $(a - b)(a^2 + ab + b^2)$

E:  $a^3 - b^3$

7) (4 points part *a*, 5 points parts *b – d*) Solve the following equations for the variable:

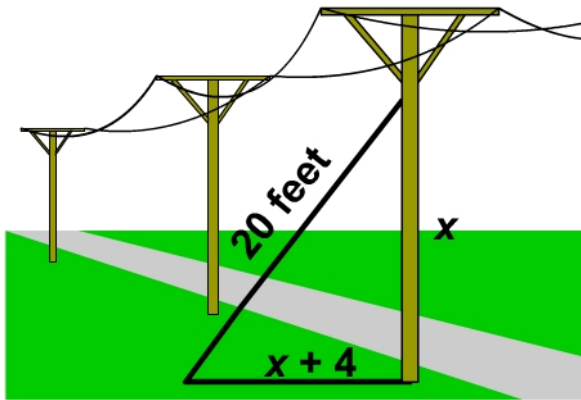
a)  $(3x - 4)(x + 2) = 0$

b)  $x^2 + 5x + 6 = 0$

c)  $4x^3 - 12x^2 - 216x = 0$

d)  $15x^2 - 19x - 8 = 0$

8) (7 points) A piece of wire measuring 20 feet is attached to a telephone pole as a guy wire. The distance along the ground from the bottom of the pole to the end of the wire is 4 feet greater than the height where the wire is attached to the pole. See the picture. How far up the pole does the guy wire reach? Assume the triangle forms a right triangle.



9) (7 points) While mid-air, a cow gymnast calculates that the distance her hooves off the ground can be approximated by the function  $h(t) = -16t^2 + 16t + 32$  where  $t$  is time in seconds and  $h$  is height in feet. At what time will the cow's hooves land on the ground?