Name:_____

Practice Test #1
Intermediate Algebra – M120

**Instructions:** *All work must be shown in order to receive all points for all questions so practice showing all work. Practice* ***boxing your final answer****. Any answer that is a fraction must be in lowest terms and as mixed number for full credit. Since you can use a 5x8 notecard on the test use your notecard to practice or make one based on the problems you got wrong. Happy studying!*

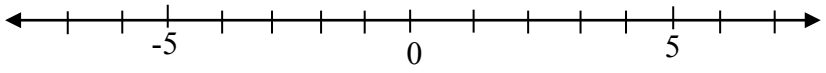
**1.** Using **roster form**, give the answers to the following based upon sets A & B

$A = \{0, 1, 2, 3, 4, 5, 6\}$ $B = \{-3, -2, -1, 0, 1, 2, 3\}$

**a)** $A \cup B$ **b)** $A \cap B$

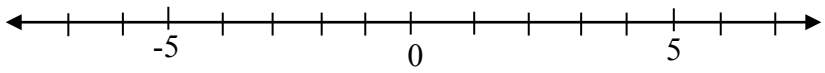
**2.** **Graph** the following and show what you have graphed in **roster form** too. Study the sets of numbers shorthand on the study guide.

$\{x \mid x \in W, -1 \leq x < 5\}$




**3.** Could 2's answer be given in interval notation? YES NO
Justify your answer.

**4.** **Graph** the following. $\{x \mid x \leq 4\}$




**5.** Could 4's answer be given in a roster form? YES NO
Justify your answer.

**6.** Give the following in **interval notation** $\{x \mid 5 \leq x < 92\}$

**7.** Solve & graph the following on a number line: $-2 \leq 1 - 3x < 16$

**8.** Solve & give **interval notation** for the following: $3(2x + 1) - 7x > 1 + 5(2x - 4)$

**9.** Find the solution set for the following. Give the solution in roster form or interval notation. If the solution is a null set, use roster form appropriately to indicate that solution. Show all work.

a) $\left| \frac{3x - 2}{2} \right| = 4$

b) $|3x| - 5 > 19$

c) $|2x - 3| \leq 7$

d) $|x - 2| + 8 < 8$

e) $\left| \frac{x - 9}{7} \right| > 0$

**10.** Factor all of the following problems **completely**.

a) $12x^5 - 15x^4 + 9x^3 + 15x^2$

b) $x^3 - 3x^2 + 7x - 21$

c) $x^2 - xy + 20y^2$

d) $-5x^3 + 5x^2 + 30x$

e) $343x^3 + 8y^3$

f) $4x^2 - 40xy + 25y^2$

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g) $36x^6 - 25y^2$

h) $x^2 - 11x - 18$

i) $4x^2 + 16$

j) $2x^3 + 54$

**11.** Solve the following using the zero factor property. If you do not use the zero factor property you will not get credit. Give your answer as a solution set.

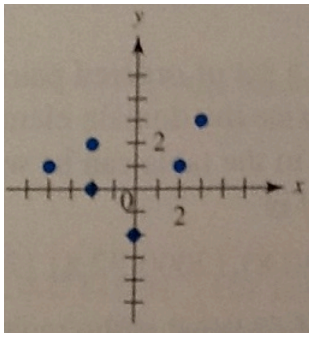
$$3x^2 - 10x = -7$$

**12.** Find the x-intercepts of the parabola and list them appropriately: $f(x) = x^2 + 19x + 84$

**13.** a) Determine if each of the following relations are functions and justify your answer.
b) Give the domain and range of the relation **in ii)**.

i) $f(x) = \sqrt{x - 1}$
D: $\{x | x \geq 1\}$

ii)




iii)

| x | y |
|---|---|
| -1 | 4 |
| -2 | -3 |
| 2 | 13 |
| 1 | 6 |

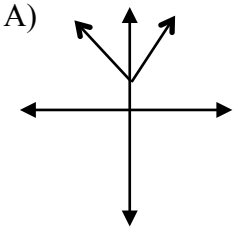
**14.** Referring to #13 above, answer the questions below. Assume that each of the problems above represent f(x) whether they are actually functions or named as f(x) to begin. Assume whether it is a function, a graph or a table it is named f(x).

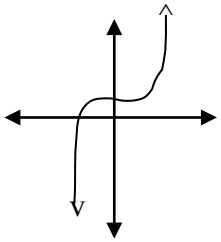
**a)** For i) in #13, find f(5)

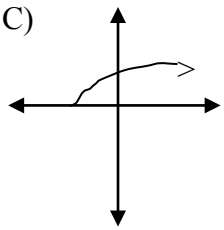
**b)** For ii) in #13, find f(0)

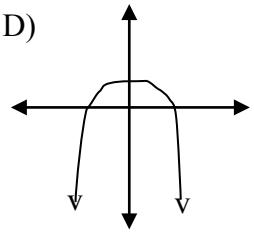
**c)** For iii) in #13, find f(x) = 6

**15.** Match the figures with the equations based upon your knowledge. Write the letter of the matching graph on the line next to the equation that best describes the graph.

A) 

B) 

C) 

D) 

_____ $f(x) = \sqrt{(x + 3)}$ _____ $f(x) = x^3 + 1$ _____ $f(x) = |x| + 3$ _____ $f(x) = -x^2 + 2$

**16.** What do all the functions in #15 have in common? Hint: The knowledge can help you look at an equation and determine whether it is a function.

**17.** The length of a rectangle is 2 meters less than twice the width. Find the dimensions of the rectangle its area is 84 square meters.

a) Set the problem up using function notation

b) Using your function find the dimensions of the rectangle

**18.** A tent has wires attached to it to help stabilize it. A wire is attached to the ground some distance from the tent. The length of wire used is 2 feet greater than the distance from the tent, and the height of the tent is 1 foot greater than the distance from the tent. How long is the wire? (Hint: The wire is the hypotenuse of a right triangle.)

**19.** A softball thrown into the air travels in a parabola. Its height is a function of the time from which it was thrown and is described by $h(t) = -16x^2 + 64x + 960$. Find the time it takes for the ball to reach the ground.