Math 131 test 1
Unit 1: 1.5-1.7, 2.1-2.4. 9.1
SAMPLE

100 points Name: _____

SHOW ALL WORK

CIRCLE T FOR TRUE, F FOR FALSE. (2 points each)

T F (1) A line with slope 5 is steeper than a line with slope 3.

T F (2) The slope of a line that is rising from left to right is positive.

T F (3) x =4 is the equation of a vertical line.

T F (4) The lines y=3x-4 and 2x-6y=7 are perpendicular.

T F (5) The slope of a horizontal line is undefined

Fill in the blanks with the most appropriate answer. (2 points each)

(6) If f(x)=2x+C and f(1)=7, what is the value of C? _____.

(7) The ordered pair (_____, 2) is a solution to the equation 2x-6y=3 .

(8) The x intercept of the line 5x + 6y = 10 is _____ .

(9) The slope of the line containing (-4,6) and (7,0) is _____

(10) The equation of a horizontal line through the point (9,2) is _____

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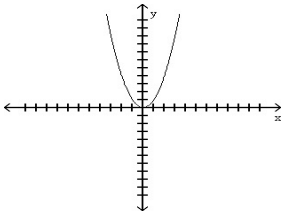
(11) Determine whether each of the following relations are functions. (5 points)

(a) $\{(4,0),(4,3),(-3,7)\}$_____ (b) $y^2 = x$_____ (c) f(x) = $\frac{1}{x}$_____

(d) _____



(e) _____

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(12) Find the domain and the range of the function: $\{(4,0),(5,0),(-3,7),(-1,12)\}$

(2 points)

Domain: _____ Range: _____

(13) Given the functions $f(x) = x^2 - 2x$ and $g(x) = \frac{1}{x-3}$, Find *(6 points)*

(a) f(-3)

(b) g(9)

(c) the domain of f(x)

(d) the domain of g(x).

(e) f(x+h)

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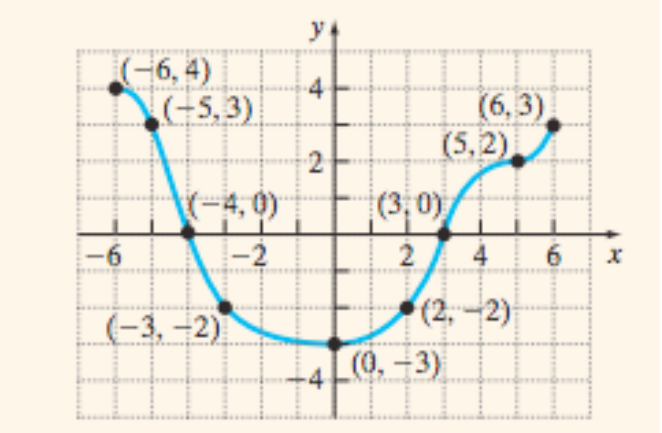
(14) Using the graph of f(x) below, find (2 points each)



(a) f(-3) _____

(b) f(0) _____

(c) Is f(4) >0 or is f(4)<0? _____

(d) What are the zeros of f? _____

(e) For what number(s) x does f(x)=3? _____

(e) What is the y intercept of f?_____

(f) Domain of f: _____

(g) Range of f: _____

(f) Explain why a function can have at most one y intercept?

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(15) Given the points A(2,5) and B(-3,7), find the following: *(9 points)*

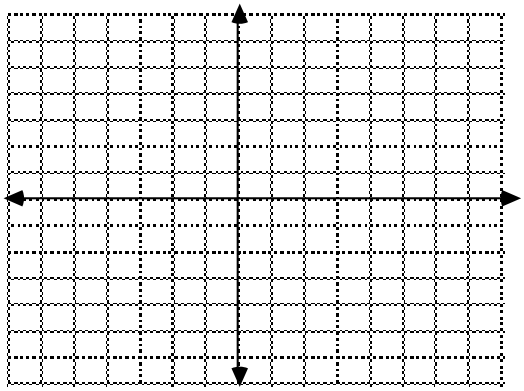
a) distance between A and B.

b) the midpoint of A and B

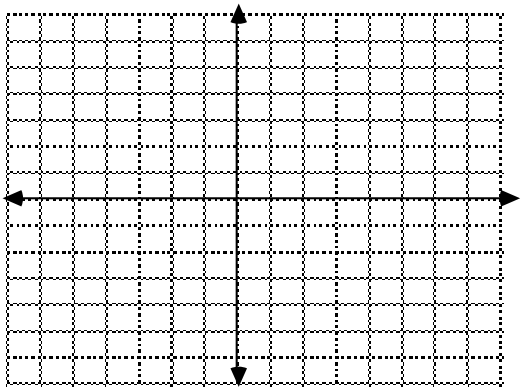
c) the slope of a line perpendicular to line AB.

(16) Graph each of the following. Show your work. Show scale and label 2 points on each graph. (10 points)

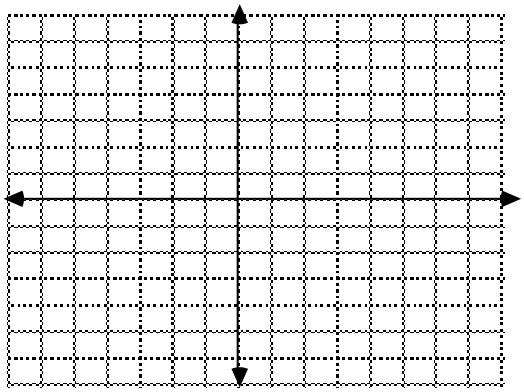
a) $x+3=y^2$



b) $f(x)=|x-2|$



(17) Graph the line which contains the point (-2,3) and has slope -1/4 (5 points)
Show scale and label 2 points on each graph.



(18) Find the equation of each of the following lines. Express answer in slope intercept form if possible.

(5 points each)

(a) The line through (-1,7) and (-2,3)

(b) The line through (3,0) and parallel to $y = \frac{1}{5}x - 4$

(c) Through the point (7,5) and (7, 2)

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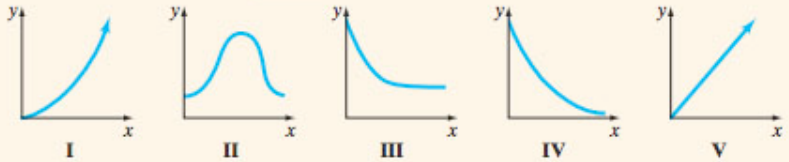
(20) (5 points)

Match each of the following functions with the graph that best describes the situation.

(a) The average high temperature each day as a function of the day of the year
(b) The number of bacteria in a Petri dish as a function of time
(c) The distance that a person rides her bicycle at a constant speed as a function of time
(d) The temperature of a pizza after it is removed from the oven as a function of time
(e) The value of a car as a function of time



(19) Label axes and show scale clearly (5 points)

Altitude of an Airplane Suppose that a plane is flying from Chicago to New Orleans. The plane leaves the gate and taxis for 5 minutes. The plane takes off and gets up to 10,000 feet after 5 minutes. The plane continues to ascend at a constant rate until it reaches its cruising altitude of 35,000 feet after another 25 minutes. For the next 80 minutes, the plane maintains a constant height of 35,000 feet. The plane then descends at a constant rate until it lands after 20 minutes. It requires 5 minutes to taxi to the gate. Draw a graph of the height of the plane as a function of time.