

MATH 116
QUIZ 1

Name _____

Show all work for full credit on any problem. Clearly indicate all answers.

1. Find the distance between the two points (3, 2) and (-8, -2). 1. _____

2. Find the midpoint of the line segment connecting the two points (3, 2) and (-8, -2). 2. _____

3. Find the value of y such that the distance between the points is 15 for points (y, 8) and (-9, -4) 3. _____

4. Find the x-intercept(s) and y-intercept(s) for the function $f(x) = x^2 - 2x - 8$ if they exist.

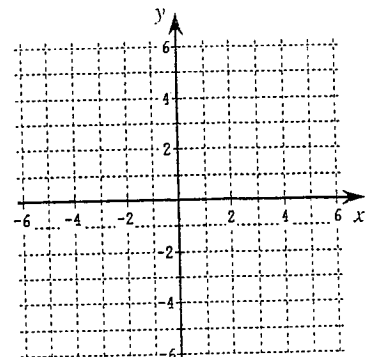
x-intercept = _____

y-intercept = _____

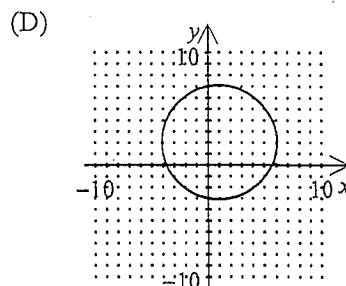
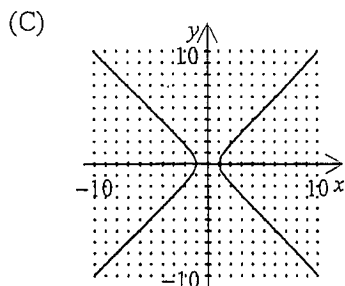
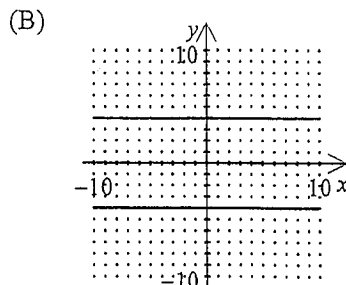
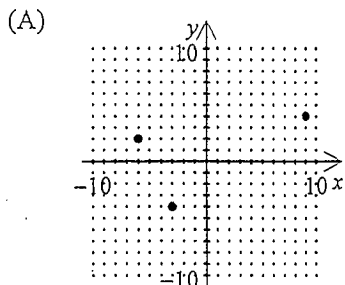
5. Check the equation for all types of symmetry: $x - y^2 = 0$

Symmetry is to: _____

6. Sketch the graph of the equation. Use a table of values.
 $y = -x^2 - 4x$

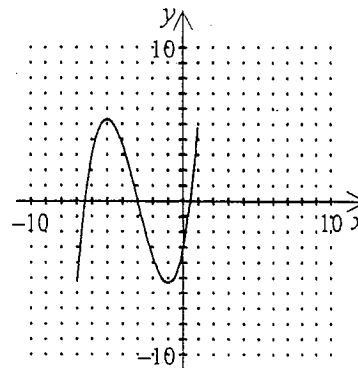


7. Use the vertical line test to determine which of the following is a function. Circle all that are functions.



8. Determine the intervals on which the function is increasing or decreasing.

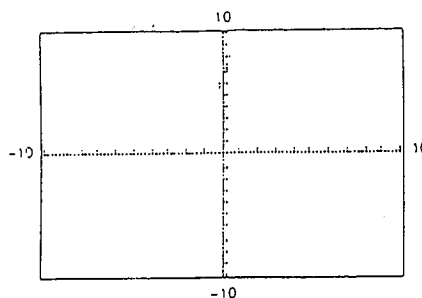
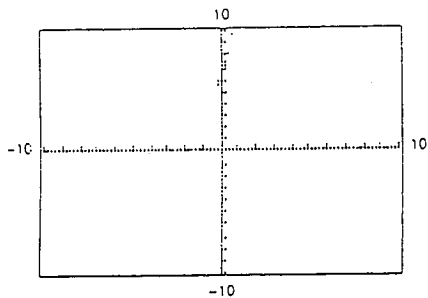
- a. Increasing on $(-7, -5)$ and $(-1, 1)$; Decreasing on $(-5, -1)$
- b. Decreasing on $(-7, -1)$; Increasing on $(-1, 1)$
- c. Increasing on $(-7, -1)$; Decreasing on $(-1, 1)$
- d. Decreasing on $(-7, -5)$ and $(-1, 1)$; Increasing on $(-5, -1)$
- e. Other: _____



9. Use a graphing utility to graph the equations. Use the standard viewing window. Sketch the graphs on the windows below. (2 points)

a. $y = |x + 3|$

b. $y = 2(x - 2)^2 + 6$



10. Find the slope of the line containing the two points (3, 2) and (-8, -2). 10. _____

11. Identify the function that is neither even nor odd. 11. _____

a. $f(x) = 2x^2 - |x^2| + 12$

b. $f(x) = x^5 - x^3 + 2x$

c. $f(x) = x^4 - x + 2 + |x - 2|$

d. $f(x) = x^3 - x$

12. Given a function $f(x)$, describe the transformation of the function: $-f(x - 2) + 5$

a. flips across x-axis, moves 2 to left and up 5

b. flips across y-axis, moves 2 to right and up 5

c. flips across x-axis, moves 5 to right and down 2

d. flips across x-axis, moves 5 to left and down 2.

e. Other: _____

13. Find the domain of the function: $f(x) = \sqrt{x + 5}$ 13. _____

14. Find the slope intercept form of the equation of the line that passes through the point (2, -1) and is perpendicular to the line $2x - 3y = 5$. 14. _____

15. An item that sells for \$145.99 has a sales tax of \$10.22 in a certain state. Find the mathematical model that gives the amount of sales tax T, in terms of the retail price P.

T = _____

16. Use the mathematical model in the problem above to find the sales tax on a purchase that has a retail price of \$540.50.

Tax = _____

17. Fill in the table of value below for the function $f(x) = |x + 2|$

x	-7	-5	-3	-1	0	1	3	5
f(x)								

18. Given $f(x) = \begin{cases} 7x - 10, & x \leq 2 \\ x^2 + 6, & x > 2 \end{cases}$, Find $f(2)$ 18. _____

19. For the problem above, find $f(4)$. 19. _____

20. Does the function in the problem 18 above have an inverse? YES NO
Explain why.

21. If $f(x) = x - 2$ and $g(x) = 6 - 2x$, find $(f + g)(x)$. 21. _____

22. If $f(x) = \frac{1}{x}$ and $g(x) = x^3$, find $(fg)(x)$. 22. _____

23. If $f(x) = 5x + 5$ and $g(x) = x + 2$, find $(f \circ g)(9)$. 23. _____

24. Find the inverse of the function: $f(x) = \frac{1 + 3x}{-4 - 3x}$ 24. _____