

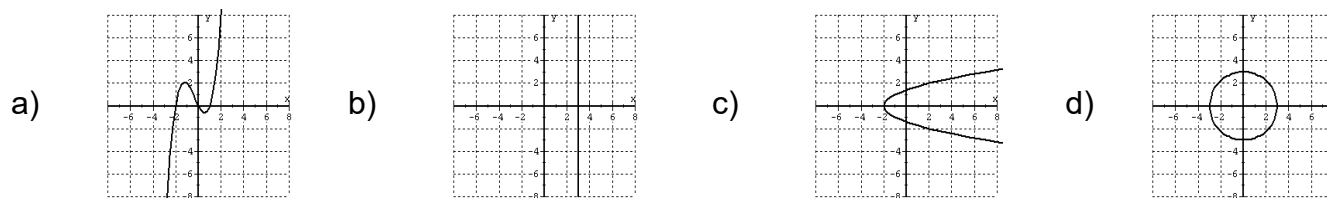
Directions: You must show all work except on multiple choice questions.

MULTIPLE CHOICE Circle the most correct response. (1 point each)

1. Let g be the function $g = \{(2, 5), (3, 4), (4, 6), (5, 4), (6, 7)\}$. Then $g(4) =$

- a) 3 b) 5 c) 6 d) $g(4)$ is undefined e) $\{2, 3, 4, 5, 6\}$

2. Which of the following is the graph of a function:



3. Let g be the function $g = \{(-2, 4), (-1, 1), (0, 0), (1, 1), (2, 4)\}$. Then the range of g is:

- a) $\{-2, -1, 0, 1, 2\}$ b) $\{0, 1, 4\}$ c) $[-2, 2]$ d) $[0, 4]$ e) none of these

4. Evaluate $f(-2)$ if $f(x) = -x^2 - x - 1$

- a) 1 b) 5 c) -3 d) -7

5. Find the center, C , and radius, r , of the circle having equation $(x - 3)^2 + (y + 1)^2 = 4$.

- a) $C(-3, 1), r = 4$ b) $C(3, -1), r = 2$
c) $C(3, -1), r = 4$ d) $C(-3, 1), r = 2$

6. Which of the following is the domain of the function $f(x) = \frac{1}{\sqrt{4-x}}$

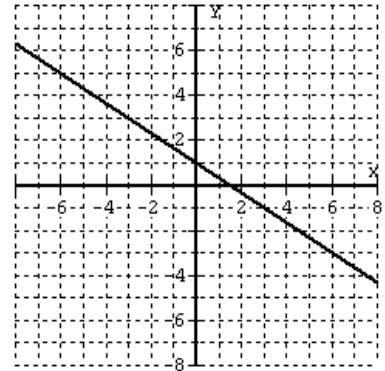
- a) $(-\infty, 4]$ b) $(-\infty, 4) \cup (4, \infty)$
c) $(-\infty, 4)$ d) $(4, \infty)$

7. What kind of symmetry does the function $y = \frac{x^3}{x^2 + 3}$ have?
- a) x-axis symmetry b) y-axis symmetry
- c) origin symmetry d) none
8. Find the x-intercepts of the function $f(x) = x^3 - x^2 - 4x + 4$?
- a) 0 b) 1, ± 2
- c) − 8 d) ± 1, 2
9. The value of an iPhone bought in 2005 depreciates, or decreases, as time passes. Two years after the iPhone was bought, it was worth \$375; 4 years after it was bought, it was worth \$200.
- a. Let x represent the number of years after 2005. Write two ordered pairs that can be used to represent this data and use them to **write a linear equation** that models this data. 5 pts
- b. Use your equation from part (a) to find the value of the iPhone 5 years after it was purchased. 1 pt

Find the slope of each of the following lines (10 - 11): (2 pts)

10. The line $y = -2$

11. The line having the graph shown:



12. Without graphing, determine whether the graphs of the following two equations are parallel, perpendicular or neither. Show work.

$$3x + 2y + 6 = 0$$

$$6x = 4y + 12$$

(3 pts)

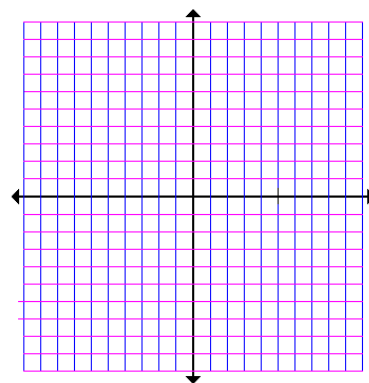
Find the slope-intercept form of the equation of each line in problems 13 - 16:

13. The line passing through the points $(-2, -7)$ and $(-3, 1)$. (4 pts)
14. The line having an x - intercept of 2 and a y - intercept of 4 (3 pts)
15. The line passing through the point $(-1, 3)$ parallel to the line having equation $2x - 3y = 4$. (4 pts)
16. The line perpendicular to the y - axis passing through the point $(2, -3)$. (2 pts)

17. Find the x and y -intercepts for the graph of the equation $2x + y = 3$ then graph all of the solutions to the equation. (4 pts)

x -intercept (write as an ordered pair):

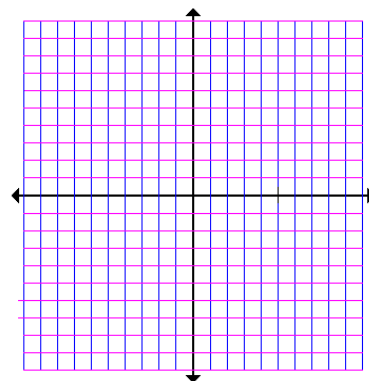
y -intercept (write as an ordered pair):



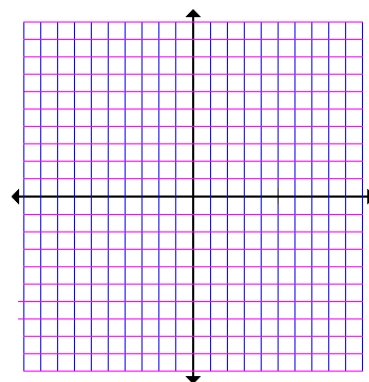
18. Find the slope and y -intercept of the line having equation $x - 2y = 3$ and use the slope and y -intercept to graph the solutions to the equation. (4 pts)

Slope: _____

y -intercept: _____



19. Sketch the graph of all solutions to the equation $-2y + 6 = 0$. (2 pt)



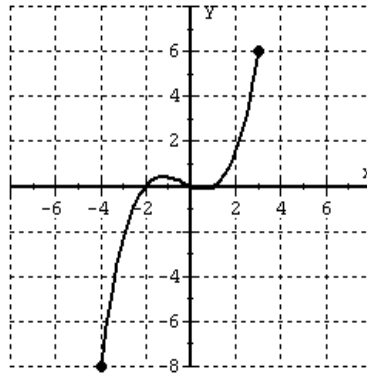
20. Let $f(x) = x^2 + x - 2$. Completely simplify the following:

4 pts

$$2f(a+1) - 3 =$$

21. The function f is graphed on the right.

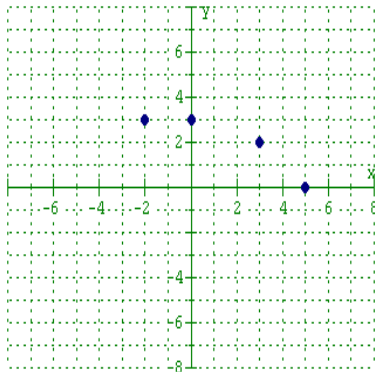
6 pts



- What is the domain of f ?
- What is the range of f ?
- Evaluate $f(-2)$
- Find the value(s) of x such that $f(x) = -2$.

22. $h(x)$ is represented by the graph shown below.

1 pt



Find $h(3) =$ _____

23. The yearly cost of tuition and required fees for attending a public two-year college full-time can be estimated by the linear function $f(x) = 222.5x + 4000$ where x is the number of years after 2005 and $f(x)$ is the total cost (in dollars) according to the U.S. National Center for Education Statistics.
- a. What is the y -intercept of this linear function and what does it mean in the context of this problem? 3 pts
- b. What is the slope of this linear function and what does it mean in the context of this problem? 3 pts
- c. Use the linear function to predict the yearly cost of tuition and required fees for attending a public two-year college full-time in the year 2015. 2 pts

24. Use your grapher to help solve the following. Round answers to two decimal places. **Include a brief sketch of the graph to justify your response.**

4 pts

$$x^3 + 11x - 6x^2 - 6 \leq 0 \quad (\text{State answer in interval notation})$$

25. Find the equation of the circle having endpoints of its diameter at $(1, 11)$ and $(-5, 5)$.

4 pts