Trig/Pre-Calculus

Mid-Chapter Review Worksheet

**1. Using the graph on the right, complete the following statements.**

The value of the function is increasing in the intervals:

The value of the function is decreasing in the intervals:

The value of the function is constant in the interval:

The value of the function is positive in the intervals:

The value of the function is negative in the intervals:

(-6.2,3)

(6,5)

(-0.8,1)   (4,1)

(-8,0)   (-6,0)   (9,0)

(-1,0)

(-10,-4)   (11,-4)

(-4,-5)
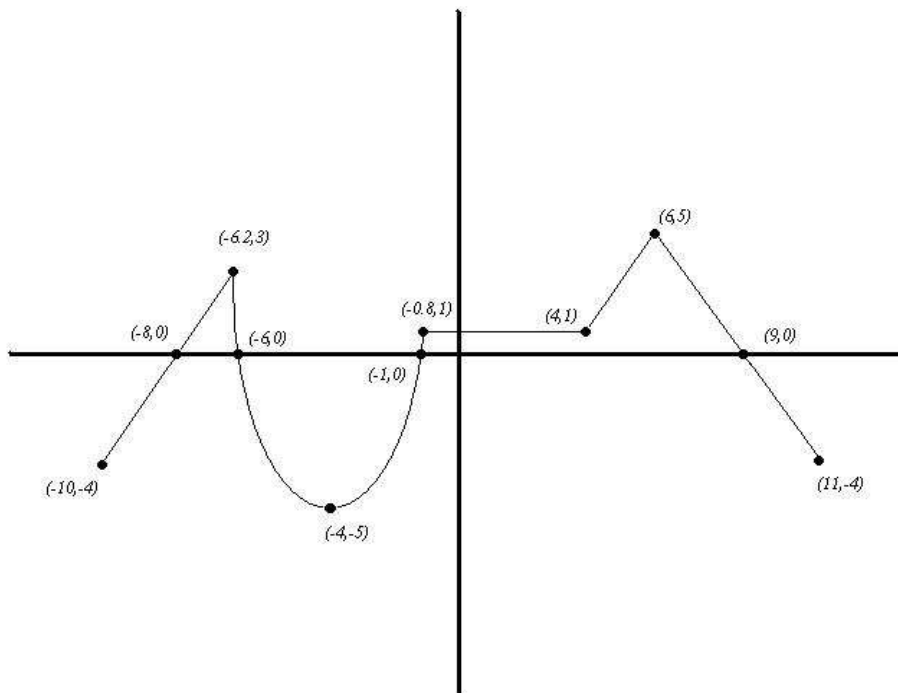
2. Given $f_{(x)} = 3x - 6$, $g_{(x)} = x - 12$, **and** $h_{(x)} = -2x - 5$ **find each of the following.**

a. $f(a+b)$

b. $g(3x+2)$

c. $h(x-12)$

d. $f(x+2) - g(3x-1)$

e. $f(2) + g(2) + h(2)$

f. $(f+g)(6)$

3. Given $f(x) = \begin{cases} x+3, & x<0 \\ 3, & 0<x\leq 2 \\ 2x-1, & x>2 \end{cases}$ **and** $g(x) = \begin{cases} \sqrt{x+2}+1, & x>-2 \\ (x+2)^2+1, & x<-2 \end{cases}$ **find each of the following.**

a. $f(6)$

b. $g(-10)$

c. $f(2)$

d. $g(7)$

e. $f(-4)$

Identify the following functions as being either Even, Odd or Neither.

4. $f(x) = 12x^5 - 4x^3 + 7x$

5. $g(x) = 3x^7 - 5x^3 + 12x - 1$

6. $h(x) = 5x^6 - 3x^4 + x^2 - 2$

7. Identify which of the following represents a function. State the rationale for your conclusions.

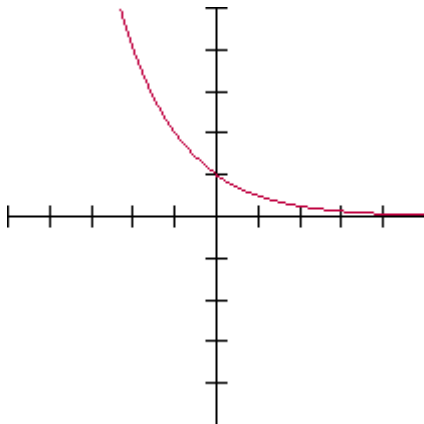**a.** $4x - 3y + 6 = 0$ **b.** $y = \sqrt{x-2} + 4$ **c.** $x + y^2 - 2y + 1 = 0$ **d.** $y = x$

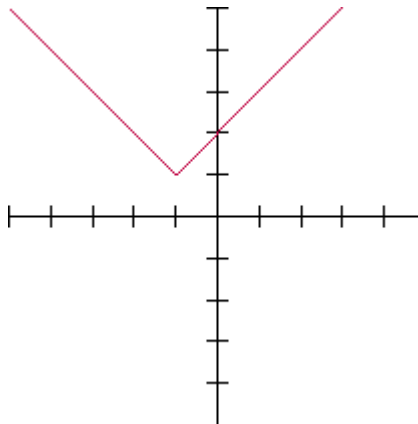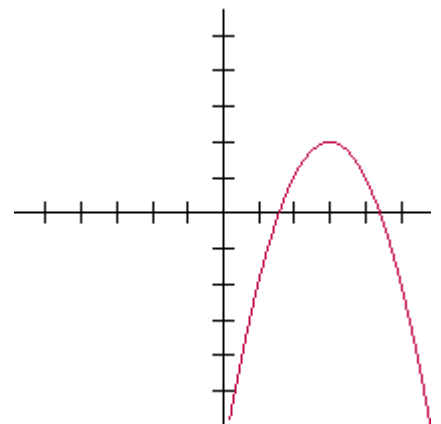**e.** $x^2 + y^2 = 16$ **f.** $y = \frac{1}{4}(x-3)^2 + 2$ **g.** $x = (y-5)^2 + 1$ **h.** $x = 5y^2 + 3$

i

j

k

l

m

n
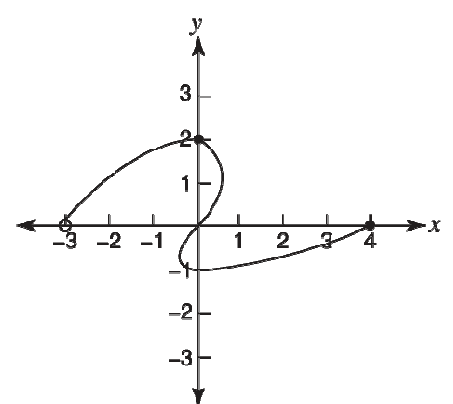
8.

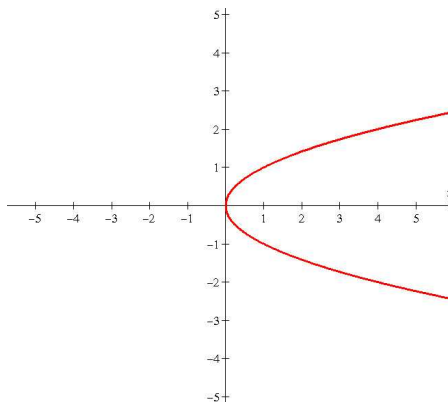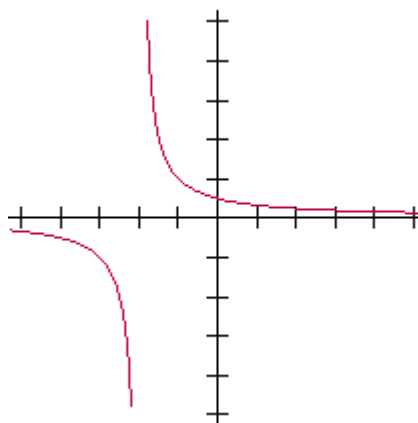**Identify the range and domain of the graph pictured on the right. Make sure to use interval notation.**

(-4,3)   (1,3)

(5,1)

Range:

(2,-2)

Domain:

(-7,-3)
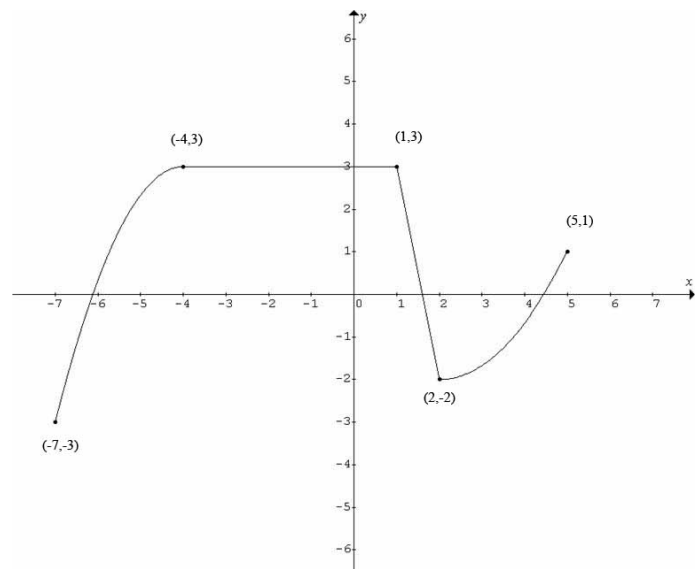
Find the domain of each of the following functions.

9. $f_{(x)} = 2(x-3)^2 + 1$

10. $f_{(x)} = \sqrt{x+4} - 2$

11. $f_{(x)} = \dfrac{x+5}{x-2}$

12. $f_{(x)} = (x+1)^3 - 5$

13. $f_{(x)} = \dfrac{1}{\sqrt{x}}$

14. $f_{(x)} = \dfrac{x+3}{x^2 + 3x - 40}$

15. $f_{(x)} = \sqrt{4-x} + 1$

16. $f_{(x)} = -\sqrt[3]{x+2} - 1$

17. $f_{(x)} = \dfrac{1}{\sqrt{x^2 - 9}}$

18. Find the equation of the line that contains the points (-2,-4) **and** (6,2).

19. If a line is perpendicular to y = 2x + 3, what is the slope of that perpendicular line?

20. If a line is parallel to y = -3/5 x –5, what is the slope of that parallel line?

21. In the year 2000, Matt was hired, and told he would get a raise every year he was with the company. That year, he made $32,000 with the company. In 2004, he made $54,000. If Matt's annual raise is constant, how much money will Matt make in 2015?

22. The slope of a line containing the points (4,4) and (8,k) is 2. Find the value of k

23. Find the equation of the line where $f(2) = 6$ and $f(4) = 0$.

24. Derive the linear function that will yield the following results.

x	-5	-4	-3	-2	-1
y	6	8	10	12	14

Find the difference quotient for each of the following.

$$\frac{f(x+h)-f(x)}{h}, \quad h \neq 0$$

25. $f(x) = x + 8$ **26.** $f(x) = 3x - 6$ **27.** $f(x) = x^2 - 7$ **28.** $f(x) = 4x^2 + 12$

29. $f(x) = x^2 - 5x + 2$ **30.** $f(x) = 2x^2 + 7x - 3$ **31.** $f(x) = 4x^2 - 3x + 8$