

MATH 120
HANDOUT #3 (Chapter 10)

1. Find all intercepts (x and y) of the function $x^2 + y - 36 = 0$

X-ints:

Y-ints:

2. Now test the function $x^2 + y - 36 = 0$ for symmetry about the x axis, the y axis and the origin.

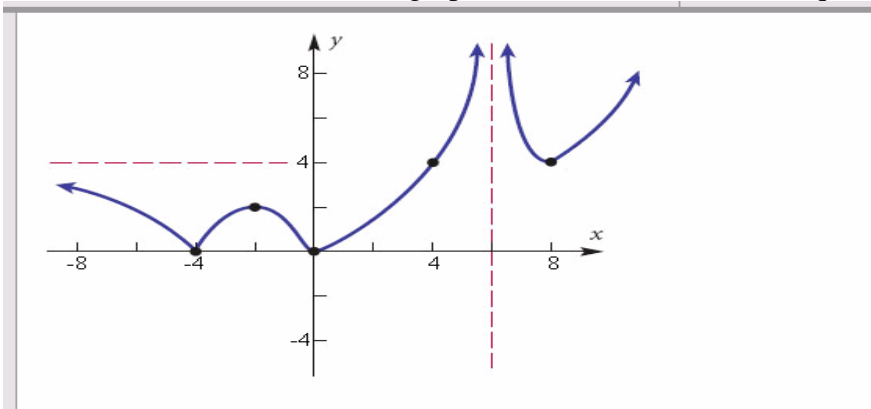
3. If it is known that the point (a, 13) is on the graph of $y = 2x + 2$, what is a?

4. Find the difference quotient for the function $f(x) = 5x^2 - 10$. Recall that to find the difference quotient you will use $\frac{f(x+h) - f(x)}{h}$

5. Consider the function $f(x) = \frac{14x}{\sqrt{x-9}}$. Which of the following best identifies the domain of the function?

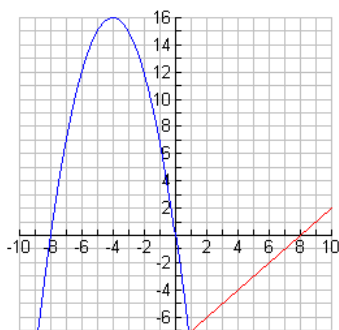
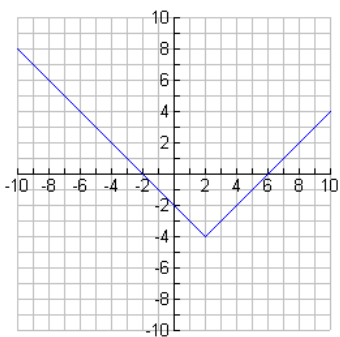
- a. $(-\infty, \infty)$ b. $[9, \infty)$ c. $(-\infty, 9]$ d. $(9, \infty)$ e. $(-\infty, 9) \cup (9, \infty)$ f. $(-\infty, 0) \cup (0, 9) \cup (9, \infty)$

6. Consider the function in the graph below. Then answer the questions that follow.



- A.** State the domain of the function using interval notation.
- B.** State the range of the function using interval notation.
- C.** State the intervals of x over which the function is increasing (remember: moving left to right)
- D.** State the intervals of x such that $f(x) > 0$

7. Refer to the graph below and answer the questions that follow.



A. Based on the appearance of the first graph, select the choice below that most accurately identifies the intervals of x over which the function is *increasing*.

- a. $(-\infty, -2)$ b. $(-\infty, \infty)$ c. $(-\infty, 2)$ d. $(6, \infty)$ e. $(-\infty, -2)$ and $(6, \infty)$ f. $(2, \infty)$

B. Again referring to the first graph, which of the following best identifies the range of the function?

- a. $(-\infty, \infty)$ b. $[-4, \infty)$ c. $(-\infty, -4]$ d. $(-\infty, 2)$ e. $(2, \infty)$

C. Using the second graph, evaluate the following: $f(-4) = \underline{\hspace{2cm}}$ $f(-2) = \underline{\hspace{2cm}}$ $f(2) = \underline{\hspace{2cm}}$

D. Write the function pictured in the first graph above (just think about the shifts and reflections that took place)

E. Now choose the appropriate function definition for the piecewise graph on the right

a. $f(x) = \begin{cases} -(x+4)^2 + 16 & \text{if } -9 \leq x \leq 1 \\ x-8 & \text{if } 1 < x \leq 10 \end{cases}$

b. $f(x) = \begin{cases} (x+4)^2 + 16 & \text{if } -9 \leq x \leq 1 \\ x-8 & \text{if } 1 < x \leq 10 \end{cases}$

c. $f(x) = \begin{cases} -(x-4)^2 + 6 & \text{if } -9 \leq x \leq 1 \\ x-8 & \text{if } 1 < x \leq 10 \end{cases}$

d. $f(x) = \begin{cases} -(x-4)^2 + 16 & \text{if } -9 \leq x \leq 1 \\ -x-8 & \text{if } 1 < x \leq 10 \end{cases}$

8. Find the average rate of change from -1 to 1 for the function $f(x) = -x^3 - 2$

9. Write the function obtained by taking the graph of $f(x) = \sqrt{x}$, reflecting it about the x axis, shifting it 3 units to the right, and 4 units down.