1. Name the function family that each graph belongs to.
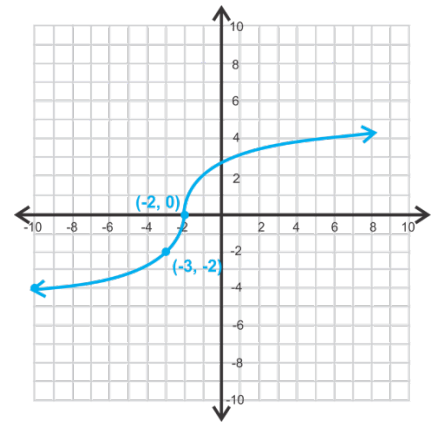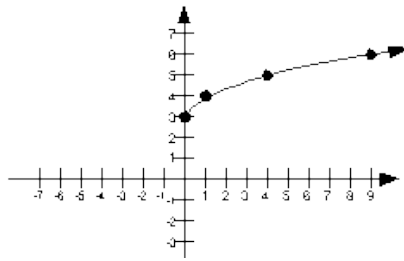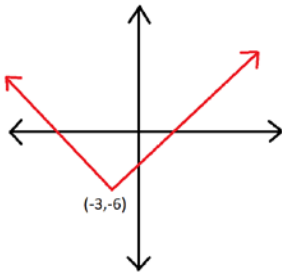
2. Describe how the parent function is transformed.

a. $f(x) = |x|$ **to** $f(x) = |x - 8|$ _____

b. $f(x) = x^2$ **to** $f(x) = x^2 + 3$ _____

c. $f(x) = \sqrt{x}$ **to** $f(x) = 5\sqrt{x}$ _____

d. $f(x) = x^3$ **to** $f(x) = -(x + 4)^3$ _____

e. $f(x) = |x|$ **to** $f(x) = |x - 12| + 7$ _____

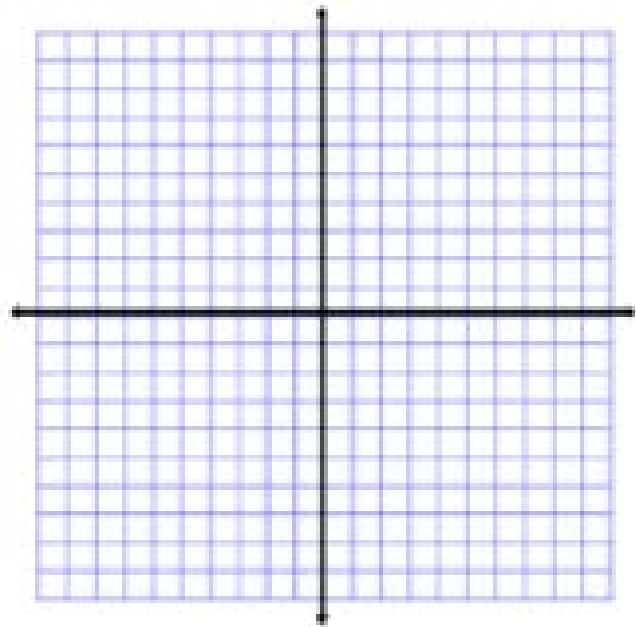3. State the domain of each function.

a. $f(x) = \sqrt{x+3}$ b. $f(x) = \sqrt{7-x}$

4. Find the average rate of change of $f(x) = x^2 + 5$ over the interval $3 \le x \le 6$

5. Given the parent function is $f(x) = \sqrt{x}$, write the new function $h(x)$ when the parent function has been translated 6 units to the left, compressed vertically by a factor of $\dfrac{1}{3}$ and translated 9 units up.

6. If (3, 8) is the turning point on the graph y = f(x), what is the turning point of the graph y = f(x + 5) – 7?
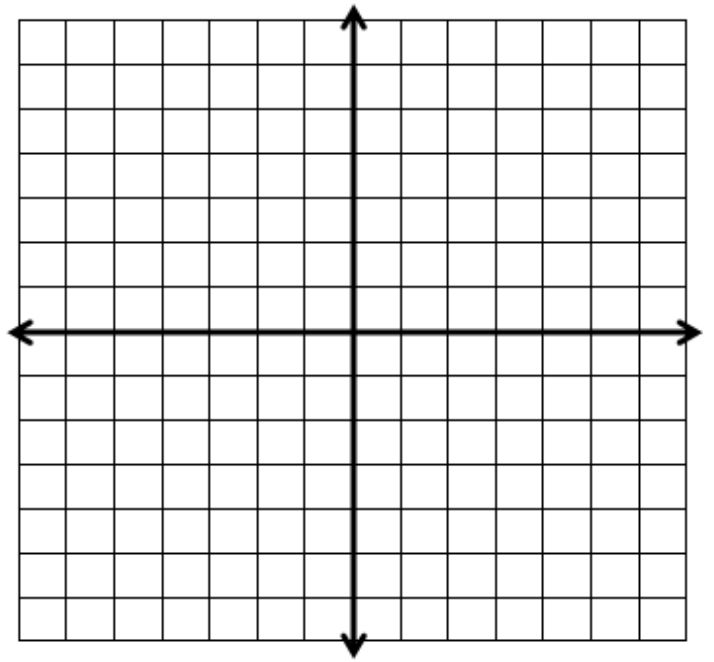
Use of grid is optional.

7. Consider the graph of y = f(x) shown below. Which transformation describes the graph of y = h(x).

(A)   h(x) = f(x – 2) – 4

(B)   h(x) = f(x + 2) – 4

(C)   h(x) = f(x – 2) + 4

(D)   h(x) = f(x + 2) + 4

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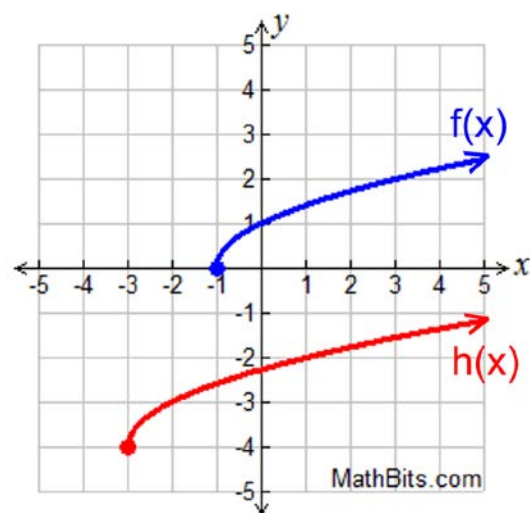
8. Graph the following function.

$$y = -\sqrt{x+4} - 3$$

State the domain. _____

State the range. _____