

1. Using the graph of the function f to answer the following questions.

a) State the domain: _____

b) State the range: _____

c) List the y-intercept(s) _____

d) List the x-intercept(s) _____

e) Find $f(-2)$ _____

f) For what values of x does $f(x) = 1$?

g) For what values of x is $f(x) \geq 0$?
Give your answer in interval notation.

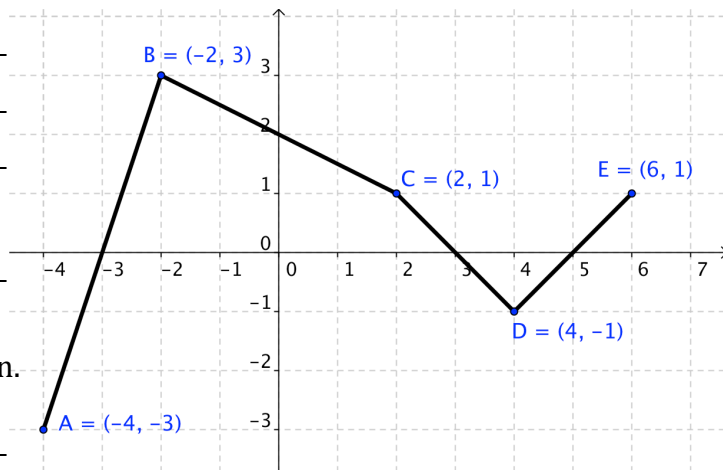
h) Over what interval(s) is f decreasing?

i) Over what interval(s) is f increasing?

j) List the local maximum(s).

k) List the local minimum(s).

function f



2. List the transformations in order on how the graph of the function $f(x) = \sqrt[3]{x}$ can be transformed to the graph of $f(x) = -\frac{1}{4}\sqrt[3]{x+2} - 5$.

Be specific in direction of transformation!

3. List the transformations in order on how the graph of the function $f(x) = |x|$ can be transformed to the graph of $f(x) = -2|x - 4| - 1$.

Be specific in direction of transformation!

4. Evaluate the function for the given value of x .

$$f(x) = \begin{cases} x - 2 & \text{if } x < 4 \\ x + 2 & \text{if } 4 \leq x \leq 8 \\ 2x^2 & \text{if } x > 8 \end{cases}$$

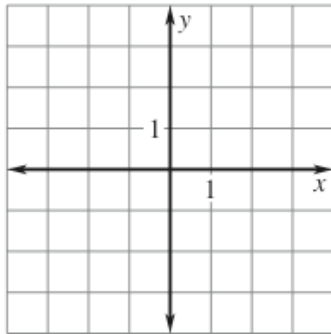
$$f(12) = \underline{\hspace{2cm}}$$

$$f(-1) = \underline{\hspace{2cm}}$$

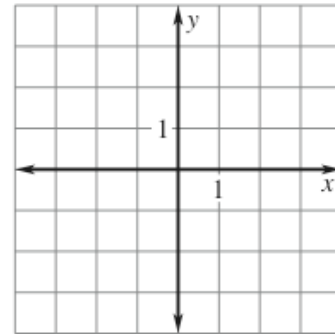
$$f(8) = \underline{\hspace{2cm}}$$

5. **Graph the piecewise function.**

a. $f(x) = \begin{cases} -x^2 - 1 & \text{if } x < 0 \\ \frac{1}{2}x + 2 & \text{if } x \geq 0 \end{cases}$

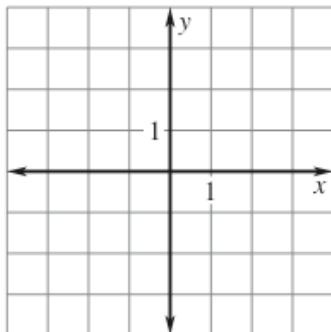


b. $f(x) = \begin{cases} \frac{1}{x} & \text{if } x < 0 \\ \sqrt{x} & \text{if } x \geq 0 \end{cases}$

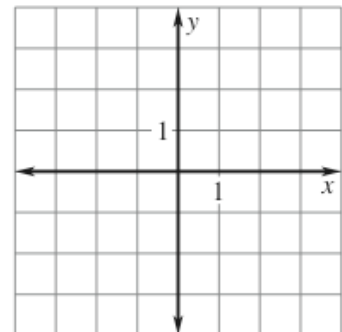


6. **Graph the step function.**

a. $f(x) = \begin{cases} 2 & \text{if } -3 \leq x < -1 \\ -1 & \text{if } -1 \leq x \leq 1 \\ -3 & \text{if } 1 < x < 3 \end{cases}$



b. $f(x) = \begin{cases} -2 & \text{if } -2 \leq x \leq -1 \\ 0 & \text{if } -1 < x < 2 \\ 3 & \text{if } 2 \leq x \leq 3 \end{cases}$



7. Use a graphing utility to graph each function over the indicated interval. Approximate any local maxima and local minima. Determine where the function is increasing and where it is decreasing.

$$f(x) = 2x^3 - 5x + 1 \quad (-3,3)$$

a. Find the Local Max

b. Find the Local Minimum

c. Find the **interval(s)** where f is increasing

d. Find the **interval(s)** where f is decreasing

8. Find the domain of the function.

a. $g(x) = \sqrt{12 - 4x}$

b. $h(x) = \frac{\sqrt{x}}{|x|}$

9. Determine if the function $k(x) = x^3 - 4x$ is EVEN, ODD, or NEITHER. Show work.

10. Describe the transformation of the graph at the right.
The solid line is the original graph.

