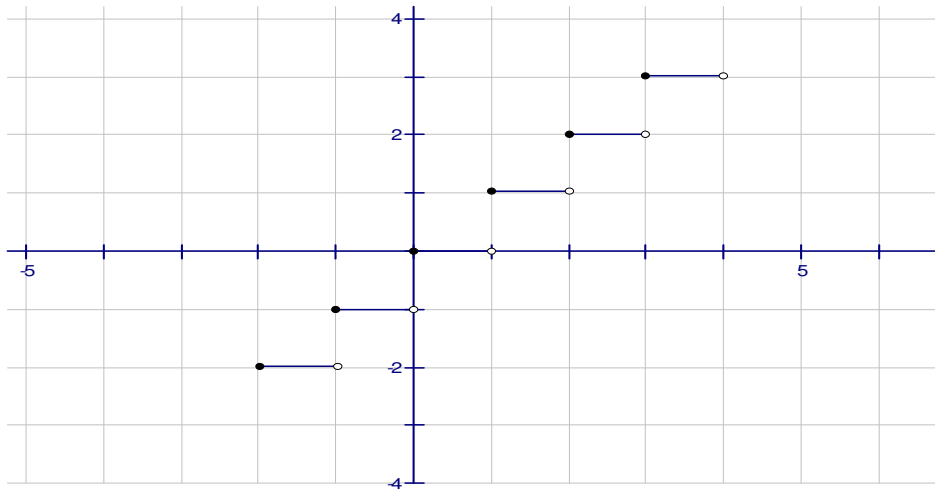


YOUR WORK MUST SUPPORT YOUR ANSWER FOR FULL CREDIT TO BE AWARDED!
LEAVE YOUR ANSWERS EXACT (NO DECIMALS)!

1. Use the graph of $f(x)$ shown below to find each limit, if it exists. If the limit does not exist, explain why.



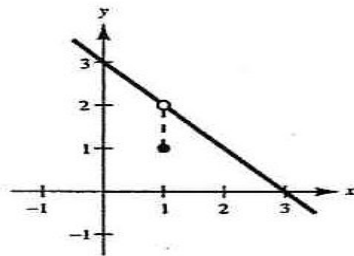
a. $\lim_{x \rightarrow -0.1} f(x)$

c. $\lim_{x \rightarrow 0^+} f(x)$

b. $\lim_{x \rightarrow 0^-} f(x)$

d. $\lim_{x \rightarrow 0} f(x)$

2. Consider the function shown below. Is this function continuous at $x = 1$? EXPLAIN using the definition of continuity at a point!



a. $f(2) =$

c. $\lim_{x \rightarrow 1} f(x) =$

b. $f(1) =$

3. Find the limit L . Then find $\delta > 0$ such that $|f(x) - L| < 0.01$ whenever $0 < |x - c| < \delta$.

$$\lim_{x \rightarrow 2} (3x + 2)$$

4. Find the **FINITE LIMIT**. If there is no finite limit, write DNE (does not exist).

a. $\lim_{x \rightarrow -27} \sqrt[3]{x}$

b. $\lim_{x \rightarrow 4} \frac{x^2 - 5x + 4}{x^2 - 2x - 8}$

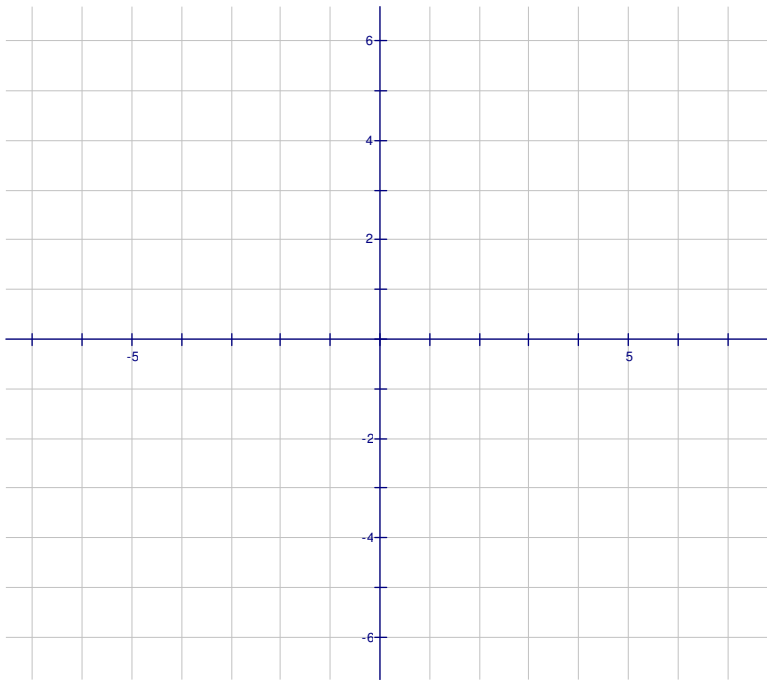
c. $\lim_{x \rightarrow 0} \frac{\sin\left(\frac{x}{4}\right)}{x}$

d. $\lim_{x \rightarrow \pi/2} \tan x$

e. $\lim_{x \rightarrow -1} \frac{x + 1}{x^3 + 1}$

f. $\lim_{x \rightarrow 6} \frac{\sqrt{x - 2} - 2}{x - 6}$

5. Sketch the following function.



$$f(x) = \begin{cases} x^2, & \text{if } x < 2, \\ 2, & \text{if } x = 2, \\ -x, & \text{if } 2 < x < 4 \\ 4, & \text{if } x \geq 4 \end{cases}$$

a) Identify the values of c , for which $\lim_{x \rightarrow c} f(x)$ exists. Use interval notation.

b) On what interval(s) is this function continuous? Use interval notation.