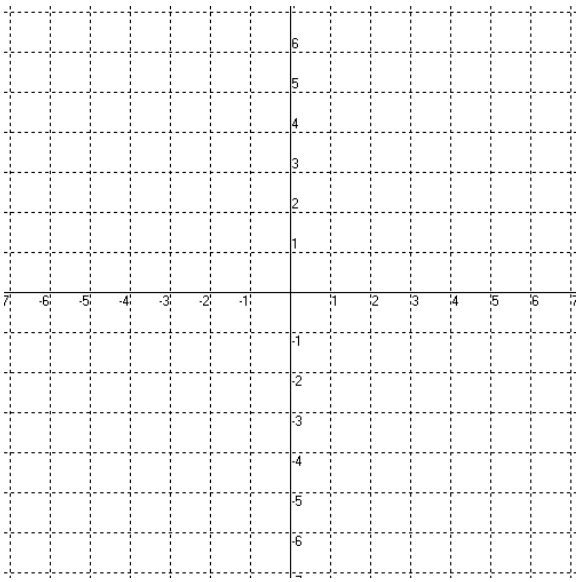
**PreAP Precal**
**Practice with Piecewise and Intro to Limits**

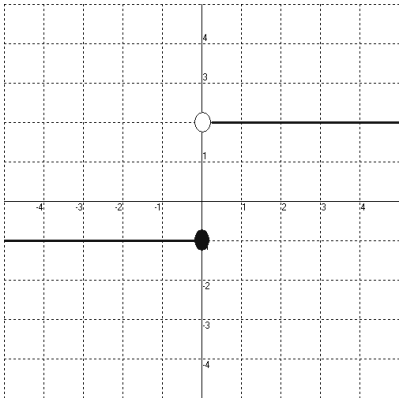
1. Graph the function. (Show a sketch of the graph.) Use the graph to find the indicated limit.

$$\lim_{x\to 0} f(x), \quad f(x)=\begin{cases} x-1 & x<0 \\ 3x\text{-}1 & x\geq 0 \end{cases}$$

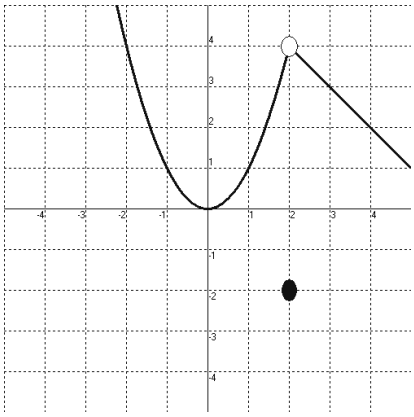


Give the limit of the following graph where f(x) is the graph shown.

2. $\lim_{x\to 0} f(x)$ =



3. $\lim_{x\to 2} f(x)$ =



Find the limit algebraically.

4. $\lim_{x\to 0} \dfrac{2-x}{x^2+4}$ =_____

5. $\lim_{x\to -1} \dfrac{x^3+x^2+3x+3}{x^4+x^3+2x+2}$ =_____

6. $\lim_{x\to 2}\dfrac{|x-2|}{x-2}=$_____

7. $\lim_{x\to -1}(4x^3-5x+1)=$_____

8. $\lim_{x\to -2^+}\dfrac{x-2}{x+2}=$_____

9. $\lim_{x\to 4}\dfrac{2-\sqrt{x}}{4-x}=$_____

10. The graph of the function f is shown in the figure. Which of the following statements about f is true?

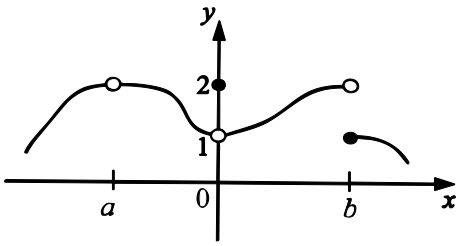
A) $f(a)$ exists

B) $\lim_{x\to a} f(x)=2$

C) $\lim_{x\to b} f(x)=1$

D) $\lim_{x\to b^-} f(x)=\lim_{x\to b^+} f(x)$

E) f is continuous at x=0



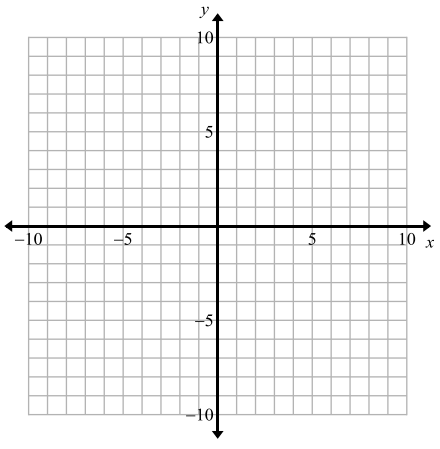

11. Evaluate the function below for the given value of x.

$$f(x)=\begin{cases}9x-4 & x>3\\ \dfrac{1}{2}x+1 & x\le 3\end{cases}$$

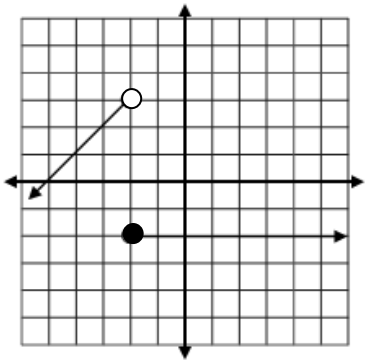
a) $f(-4)$. b) $f(2)$. c) $f(3)$.

12. Graph the piecewise function:

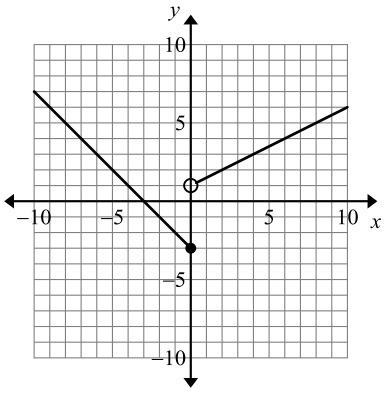
$$f(x)=\begin{cases}-\dfrac{1}{2}x-1 & x<2\\ 3x-7 & x\ge 2\end{cases}$$




13. Write a piecewise function for the graph below:



14. Which function is represented by the graph?



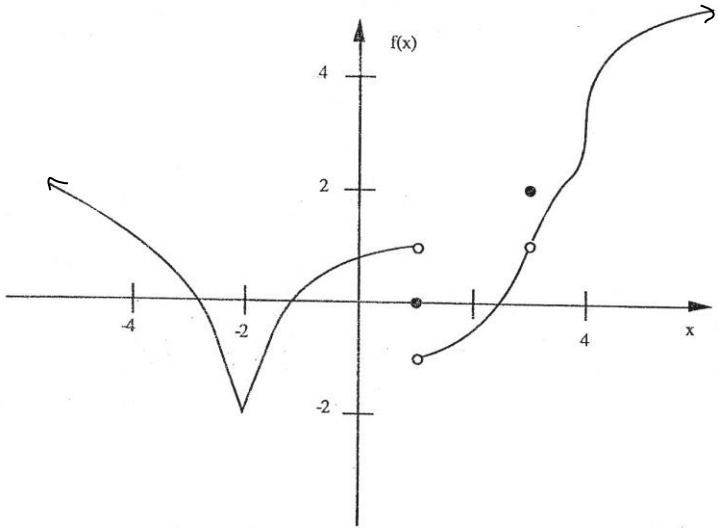

**A.** $f(x)=\begin{cases}-x-3, & \text{if } x\le 0\\ \frac{1}{2}x+1, & \text{if } x>0\end{cases}$

**C.** $f(x)=\begin{cases}-x+3, & \text{if } x\le 0\\ \frac{1}{2}x+1, & \text{if } x>0\end{cases}$

**B.** $f(x)=\begin{cases}x-3, & \text{if } x\le 0\\ -\frac{1}{2}x+1, & \text{if } x>0\end{cases}$

**D.** $f(x)=\begin{cases}x+3, & \text{if } x\le 0\\ -\frac{1}{2}x+1, & \text{if } x>0\end{cases}$

15. Given the graph of the following function.




Find the following:

A) $f(1)$

B) $\lim_{x\to 1^-} f(x)$

C) $\lim_{x\to 1^+} f(x)$

D) $\lim_{x\to 1} f(x)$

E) $f(3)$

F) $\lim_{x\to 3^-} f(x)$

G) $\lim_{x\to 3^+} f(x)$

H) $\lim_{x\to 3} f(x)$

I) $\lim_{x\to -2} f(x)$

J) $\lim_{x\to 0} f(x)$

K) $\lim_{x\to -3} f(x)$