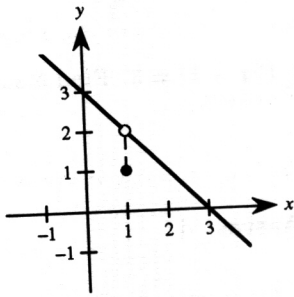


Name \_\_\_\_\_

Calculus Test #1 Review

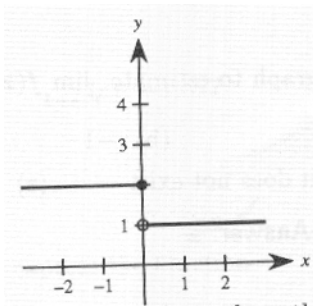
1. Use the graph to find  $\lim_{x \rightarrow 1} f(x)$  if

$$f(x) = \begin{cases} 3 - x, & x \neq 1 \\ 1, & x = 1 \end{cases}$$



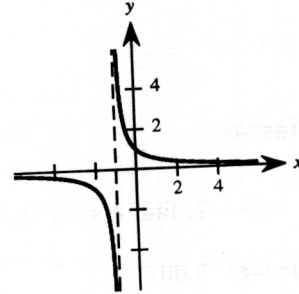
- A) 2      B) 1      C)  $\frac{3}{2}$   
D) Does not exist      E) None of these

3. Use the graph to find the  $\lim_{x \rightarrow 0} f(x)$  (if it exists).



2. Use the graph to find  $\lim_{x \rightarrow -1} f(x)$  if

$$f(x) = \frac{1}{x+1}$$



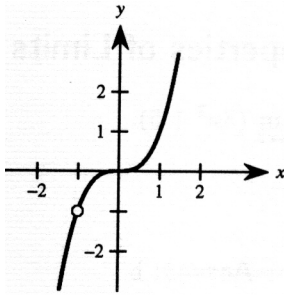
- A) 0      B) 1      C)  $\infty$   
D) DNE      E) None of these

4. Determine whether the statement is true or false. If it is false, give an example to show that it is false.

$$\text{If } \lim_{x \rightarrow 3} f(x) = 9, \text{ then } f(3) = 9.$$

5a. Use the graph to find  $\lim_{x \rightarrow 1} f(x)$  (if it exists).

5b. Use the graph to find  $\lim_{x \rightarrow -1} f(x)$  (if it exists).



Use for 7a and 7b:

- A) 1      B) -2      C) DNE  
D) -1      E) -3

7. Find  $\lim_{x \rightarrow -1} \frac{x^2 + 3x + 2}{x^2 + 1}$ .

9. Find  $\lim_{x \rightarrow 3} \sqrt{9 - x^2}$

- A) 0      B)  $\sqrt{6}$       C)  $3\sqrt{2}$   
D) DNE      E) None of these

6. Find  $\lim_{x \rightarrow -3} (-2x^2 + 1)$ .

- A) 37      B) 19      C) -17  
D)  $\pm\sqrt{2}$       E) None of these

8. Find  $\lim_{x \rightarrow 1} \frac{x^2 - x - 2}{x - 3}$

10. Find  $\lim_{x \rightarrow 2} \sqrt{4x^2 + 9}$

11. If  $\lim_{x \rightarrow c} f(x) = -6$  and  $\lim_{x \rightarrow c} g(x) = 3$ , then find  $\lim_{x \rightarrow c} ([f(x)]^2 - 2f(x)g(x) + [g(x)]^2)$

- A) 63      B) 81      C) 45  
D) -9      E) None of these

13. Find  $\lim_{x \rightarrow \frac{\pi}{2}} \frac{\sin x}{x}$ .

- A) 0      B)  $\frac{2}{\pi}$       C)  $-\frac{\pi}{2}$   
D)  $\frac{2\sqrt{2}}{\pi}$       E) None of these

15. Find  $\lim_{x \rightarrow -2} \frac{x+2}{x^3+8}$ .

17. Find the limit:  $\lim_{x \rightarrow 1} \frac{3x^3 - 4x^2 - 5x + 2}{x^2 - x - 2}$ .

12. If  $\lim_{x \rightarrow c} f(x) = -\frac{1}{2}$  and  $\lim_{x \rightarrow c} g(x) = \frac{2}{3}$ , find  $\lim_{x \rightarrow c} \frac{f(x)}{g(x)}$ .

14. Find a function that agrees with  $f(x)$  at all but one point by factoring/cancelling.

$$f(x) = \frac{x^2 - 5x - 6}{x + 1}$$

Then find  $\lim_{x \rightarrow -1} \frac{x^2 - 5x - 6}{x + 1}$

16. Find  $\lim_{x \rightarrow 3} \frac{x-3}{|x-3|}$ .

18. Find the limit:  $\lim_{\Delta x \rightarrow 0} \frac{\sqrt{(x + \Delta x) + 8} - \sqrt{x + 8}}{\Delta x}$

19. Find  $\lim_{x \rightarrow 0} \frac{\sqrt{x + 4} - 2}{x}$

20. Match the graph with the correct function.

A)  $f(x) = \frac{x + 3}{x - 1}$

B)  $f(x) = x + 3$

C)  $f(x) = \frac{x - 1}{x^2 + 2x - 3}$

D)  $f(x) = \frac{x^2 + 2x - 3}{x - 1}$

E) None of these

