

## Limits

1. Complete the table and use the result to estimate the limit. Use a graphing utility to graph the function to confirm your result (similar to p.57 #5-12)

$$\lim_{x \rightarrow 2} (x^2 + 4x - 1)$$

x	1.9	1.99	1.999	2	2.001	2.01	2.1
f(x)				?			

2. Complete the table and use the result to estimate the limit. Use a graphing utility to graph the function to confirm your result (similar to p.57 #5-12)

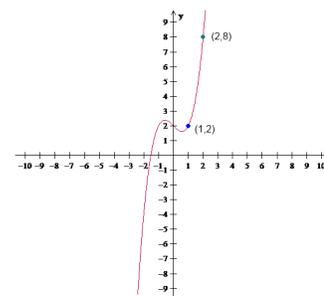
$$\lim_{x \rightarrow 3} \left( \frac{x^2 - 9}{x - 3} \right)$$

x	2.9	2.99	2.999	3	3.001	3.01	3.1
f(x)				?			

3. Use the graph of f(x) to find the limit (if it exists) (similar to p.57 #1-4)

(a)  $\lim_{x \rightarrow 1} f(x)$

(b)  $\lim_{x \rightarrow 2} f(x)$

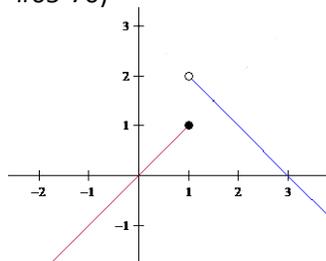


5. Use the graph of f(x) to find the limit where  $c = 1$  (if it exists) (similar to p.59 #65-70)

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

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

(c)  $\lim_{x \rightarrow c} f(x)$



6. Find the limit (similar to p.58 #25-36)

$$\lim_{x \rightarrow -3} (x^2 - 3x)$$

7. Find the limit (similar to p.58  
#25-36)

$$\lim_{x \rightarrow -1} \left( \frac{4x-1}{3-x} \right)$$

8. Find the limit (similar to p.58  
#25-36)

$$\lim_{x \rightarrow 4} \left( \frac{\frac{1}{x+3} - \frac{1}{3}}{x} \right)$$

9. Find the limit (similar to p.58  
#37-42)

$$\lim_{x \rightarrow 4} \left( \frac{2x^2 - 9x + 4}{x-4} \right)$$

10. Find the limit (similar to p.58  
#37-42)

$$\lim_{x \rightarrow -3} \left( \frac{x^2 - 4x - 21}{x^2 - 9} \right)$$

11. Find the limit (similar to p.58  
#51-53)

$$\lim_{x \rightarrow 2} f(x), \text{ where } f(x) = \begin{cases} 3x-1, & x \neq 2 \\ 7, & x = 2 \end{cases}$$

12. Find the limit (similar to p.58  
#51-53)

$$\lim_{x \rightarrow 3} f(x), \text{ where } f(x) = \begin{cases} 5x-1, & x \leq 3 \\ -x+17, & x > 3 \end{cases}$$

13. Find the limit (similar to p.58  
#51-53)

$$\lim_{x \rightarrow 2} f(x), \text{ where } f(x) = \begin{cases} 3x - 2, & x \leq 2 \\ 4x - 1, & x > 2 \end{cases}$$

14. Find the limit (similar to p.58  
#43-46)

$$\lim_{\Delta x \rightarrow 0} \left( \frac{9(x + \Delta x) + 2 - (9x + 2)}{\Delta x} \right)$$

15. Find the limit (similar to p.58  
#47-50)

$$\lim_{\Delta x \rightarrow 0} \left( \frac{\sqrt{x + \Delta x} - \sqrt{x}}{\Delta x} \right)$$

16. Find the limit (if it exists)  
(similar to p.59 #55-58, 61-63)

$$\lim_{x \rightarrow 3} \left( \frac{1}{x - 3} \right)$$