Pre-Calculus
HOMEWORK: Section 12.1

Name: _____

In numbers 1 & 2, use each table to find the indicated limit.

1. $\lim_{x\to 2} 2x^2$

x	1.99	1.999	1.9999 →←2.0001	2.001	2.01
$f(x)$	7.0202	7.9920	7.9992 → ←8.0008	8.0080	8.0802

2. $\lim_{x\to 0} \dfrac{\sin 3x}{x}$

x	-0.03	-0.02	-0.01→←0.01	0.02	0.03
$f(x)$	2.9960	2.9982	2.9996→←2.9996	2.9982	2.9960

For numbers 3 – 8, construct a table to find the indicated limit.

3. $\lim_{x\to 2} 5x^2$

x	y
1.99	
1.999	
2.001	
2.01	

4. $\lim_{x\to 3} \dfrac{1}{x-2}$

x	y
2.99	
2.999	
3.001	
3.01	

5. $\lim_{x\to 0} \dfrac{x}{x^2+1}$

x	y
–0.03	
–0.02	
–0.01	
0.01	
0.02	
0.03	

6. $\lim_{x\to -2} \dfrac{x^3+8}{x^2+2}$

x	y
–2.001	
–2.01	
–1.999	
–1.99	

7. $\lim_{x\to 0} \dfrac{2x^2+x}{\sin x}$

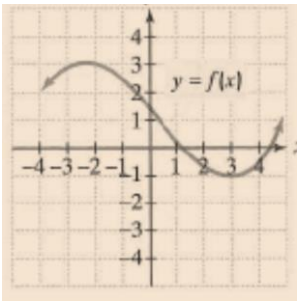
x	y
–0.03	
–0.02	
–0.01	
0.01	
0.02	
0.03	

8. $\lim_{x\to 0} \dfrac{\tan x}{x}$

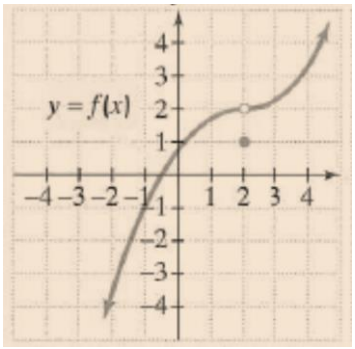
x	y
–0.03	
–0.02	
–0.01	
0.01	
0.02	
0.03	

For numbers 9 & 10, use the graph of f to find the indicated limit.

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



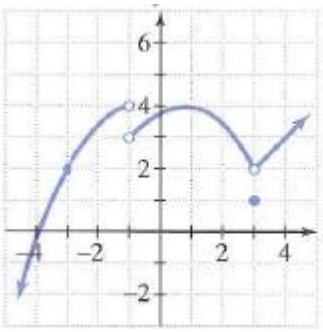
10. $\lim_{x\to 2} f(x)$



11. $\lim_{x\to 0} f(x)$, where $f(x) = \begin{cases} x+1 & \text{if } x < 0 \\ 2x+1 & \text{if } x \geq 0 \end{cases}$

12. $\lim_{x\to 3} f(x)$, where $f(x) = \begin{cases} 3x & \text{if } x \geq 3 \\ x^2 & \text{if } x < 3 \end{cases}$

13. The graph of a function is given. Use the graph to find the indicated limit, or state that the limit does not exist.

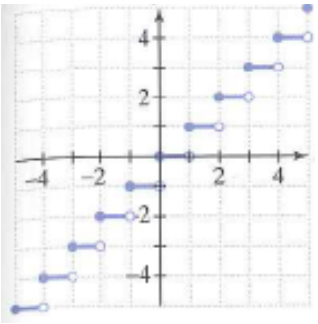


a) $\lim_{x\to -3^-} f(x)$ b) $\lim_{x\to -3^+} f(x)$ c) $\lim_{x\to -3} f(x)$

e) $\lim_{x\to -1^-} f(x)$ f) $\lim_{x\to -1^+} f(x)$ g) $\lim_{x\to -1} f(x)$

i) $\lim_{x\to 3^-} f(x)$ j) $\lim_{x\to 3^+} f(x)$ k) $\lim_{x\to 3} f(x)$

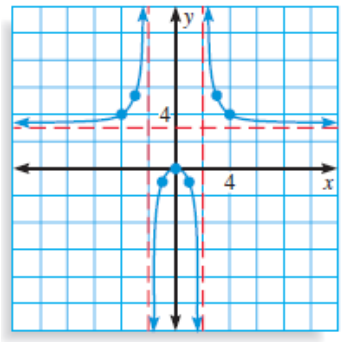
14. The graph of a function is given. Use the graph to find the indicated limit, or state that the limit does not exist.



a) $\lim_{x\to 2^-} f(x)$ b) $\lim_{x\to 2^+} f(x)$ c) $\lim_{x\to 2} f(x)$

e) $\lim_{x\to 2.5^-} f(x)$ f) $\lim_{x\to 2.5^+} f(x)$ g) $\lim_{x\to 2.5} f(x)$

15. The graph of a rational function is given. Use the graph to find the indicated limit, or state that the limit does not exist.



a) $\lim_{x\to 2^-} f(x)$ b) $\lim_{x\to 2^+} f(x)$ c) $\lim_{x\to 2} f(x)$

e) $\lim_{x\to \infty} f(x)$ f) $\lim_{x\to -\infty} f(x)$