

Calculus I
Chapter 2 Review

Find each limit or state if it does not exist.

$$1. \lim_{x \rightarrow -2} x^3(x-4)$$

$$2. \lim_{x \rightarrow -2} \frac{x^2 - x - 2}{x - 2}$$

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

$$4. \lim_{x \rightarrow 5^+} \frac{1}{5-x}$$

$$5. \lim_{x \rightarrow -\infty} 2 + \frac{1}{x} + \frac{3}{x^2}$$

$$6. \lim_{x \rightarrow -3} 4$$

$$7. \lim_{x \rightarrow 5} \frac{x}{5-x}$$

$$8. \lim_{x \rightarrow 0} \frac{x^3 - 4x + \sin x}{2x}$$

$$9. \lim_{h \rightarrow 0} \frac{1}{\sqrt{4h+3} + \sqrt{3}}$$

$$10. \lim_{y \rightarrow 0} \frac{\sin 3y}{y}$$

$$11. \lim_{x \rightarrow \infty} \frac{\sqrt{2x^2 + 1}}{x - 1}$$

$$12. \lim_{x \rightarrow \infty} \frac{-x^4 + x^3}{21x^3 + 32}$$

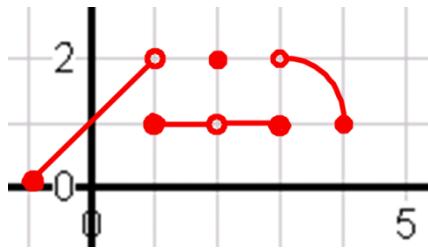
$$13. \lim_{x \rightarrow -\infty} \frac{4x^2 + 5}{7x^2 - 2}$$

$$14. \lim_{x \rightarrow 1} \frac{x^2 - 2x + 1}{x^3 - 2x^2 + x}$$

$$15. \lim_{x \rightarrow 0^-} \frac{1}{x^2}$$

$$16. \lim_{x \rightarrow \infty} \sqrt{7x^2 + 2} - x$$

Evaluate each limit for the given graph.



17. $\lim_{x \rightarrow 2} f(x)$

18. $\lim_{x \rightarrow 4} f(x)$

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

20. $\lim_{x \rightarrow 3^-} f(x)$

21. $\lim_{x \rightarrow 3^+} f(x)$

22. $f(3)$

23. $f(2)$

24. $\lim_{x \rightarrow -1^+} f(x)$

For the graph above, determine if the given intervals are continuous.

25. $[-1, 1]$

26. $[-1, 1)$

27. $(1, 2)$

28. $(1, 2]$

29. Find the points of discontinuity for the graph above on the interval $[-1, 4]$.

31. Find the value of k that will make the function continuous: $f(x) = \begin{cases} \frac{x^2 + 2x - 15}{x - 3}, & x \neq 3 \\ k & x = 3 \end{cases}$

32. Find any discontinuities for the function. $f(x) = \frac{x - 3}{x^2 - 9}$