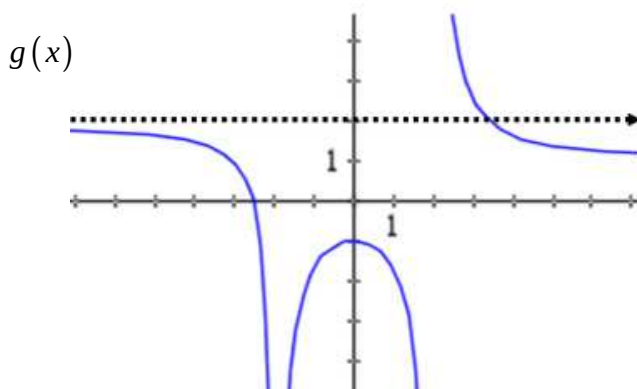


Use the following graph for questions #1-12.



1. $\lim_{x \rightarrow -2^+} g(x)$
2. $\lim_{x \rightarrow -2^-} g(x)$
3. $\lim_{x \rightarrow -2} g(x)$
4. $\lim_{x \rightarrow 2} g(x)$
5. $\lim_{x \rightarrow 2^-} g(x)$
6. $\lim_{x \rightarrow 2^+} g(x)$
7. $\lim_{x \rightarrow 0} g(x)$
8. $\lim_{x \rightarrow \infty} g(x)$
9. $\lim_{x \rightarrow -\infty} g(x)$
10. Explain why $y = 1$ is a horizontal asymptote to $g(x)$.
11. Explain why $x = -2$ is a vertical asymptote to $g(x)$.
12. Is there a vertical asymptote at $x = 2$?
13. Sketch the graph of f that satisfies all of the given conditions.

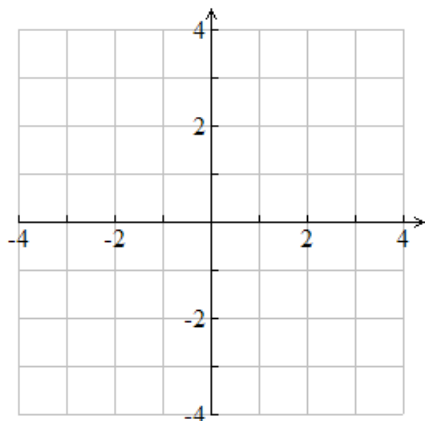
$$\lim_{x \rightarrow 2} f(x) = -\infty$$

$$\lim_{x \rightarrow \infty} f(x) = 2$$

$$\lim_{x \rightarrow -\infty} f(x) = 0$$

$$\lim_{x \rightarrow 0^+} f(x) = \infty$$

$$\lim_{x \rightarrow 0^-} f(x) = -\infty$$



14. Find the following for $g(x)$.

a) $\lim_{x \rightarrow \infty} g(x)$

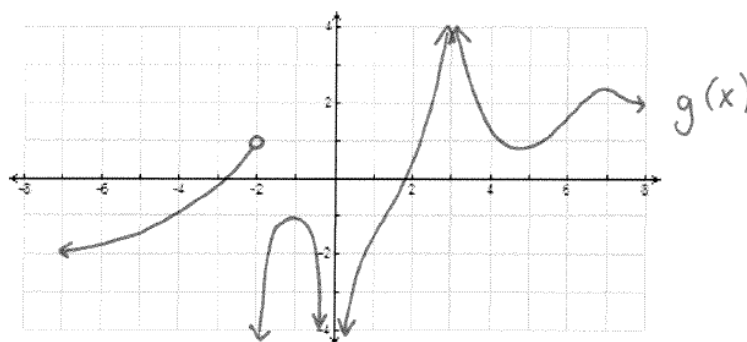
b) $\lim_{x \rightarrow -\infty} g(x)$

c) $\lim_{x \rightarrow 3} g(x)$

d) $\lim_{x \rightarrow 0} g(x)$

e) $\lim_{x \rightarrow -2^+} g(x)$

f) equations of all asymptotes



Find each limit using a calculator.

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

16. $\lim_{x \rightarrow 1} \frac{2-x}{(x-1)^2}$

17. $\lim_{x \rightarrow \left(-\frac{\pi}{2}\right)^-} \sec x$

18. $\lim_{x \rightarrow \infty} \frac{x^3 + 5x}{2x^3 - x^2 + 4}$

19. $\lim_{x \rightarrow \infty} \frac{4x^4 + 5}{(x^2 - 2)(2x^2 - 1)}$

20. $\lim_{x \rightarrow \infty} \frac{\sin^2 x}{x^2}$

21. $\lim_{x \rightarrow \infty} \tan^{-1}(x^4 - x^2)$

22. $\lim_{x \rightarrow \infty} e^{-x^2}$

23. $\lim_{x \rightarrow \infty} \left(\sqrt{9x^2 + x} - 3x \right)$

24. $\lim_{x \rightarrow \infty} \cos x$

25. $\lim_{x \rightarrow \infty} \frac{x^7 - 1}{x^6 + 1}$

26. $\lim_{x \rightarrow -\infty} (x^3 - 5x^2)$

27. $\lim_{x \rightarrow 5^-} \frac{e^x}{(x-5)^3}$

28. $\lim_{x \rightarrow 5^+} \ln(x-5)$

29. $\lim_{x \rightarrow \infty} \frac{3x+5}{x-4}$

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

31. $\lim_{x \rightarrow \infty} \frac{x+2}{\sqrt{9x^2+1}}$

32. The cost in millions of dollars for a governmental agency to seize $x\%$ of an illegal drug is

$$C = \frac{528x}{100-x}, \quad 0 \leq x < 100.$$

Find the cost for seizing 25% of the drug, 50% of the drug, and 75% of the drug. Find the limit of C as $x \rightarrow 100^-$ and interpret its meaning.