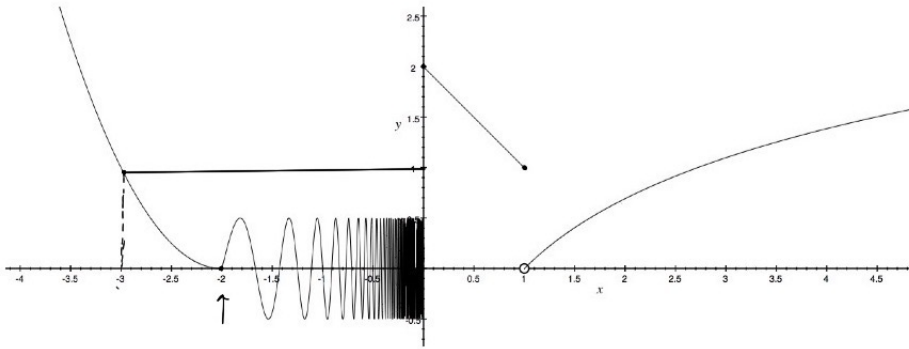
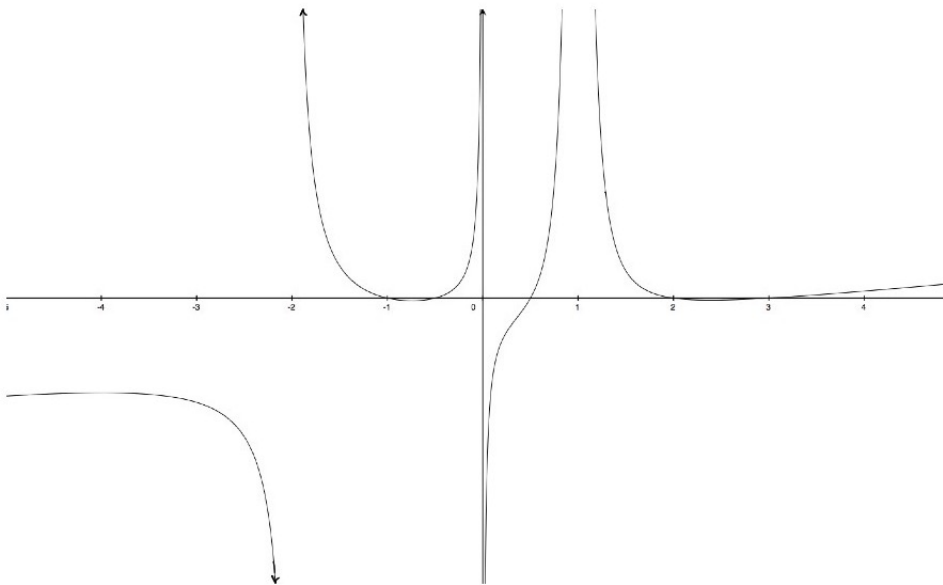


1. Use the graph of f below to determine the following limits.



- | | | |
|--------------------------------------|-------------------------------------|-------------------------------------|
| (a) $\lim_{x \rightarrow -3} f(x)$ | (e) $\lim_{x \rightarrow 0^-} f(x)$ | (i) $\lim_{x \rightarrow 1^-} f(x)$ |
| (b) $\lim_{x \rightarrow -2^-} f(x)$ | (f) $\lim_{x \rightarrow 0^+} f(x)$ | (j) $\lim_{x \rightarrow 1^+} f(x)$ |
| (c) $\lim_{x \rightarrow -2^+} f(x)$ | (g) $\lim_{x \rightarrow 0} f(x)$ | (k) $\lim_{x \rightarrow 1} f(x)$ |
| (d) $f(2)$ | (h) $f(0)$ | (l) $f(1)$ |

2. Use the graph of g below to determine the following limits.



- | |
|--------------------------------------|
| (a) $\lim_{x \rightarrow -2^-} f(x)$ |
| (b) $\lim_{x \rightarrow -2^+} f(x)$ |
| (c) $\lim_{x \rightarrow -2} f(x)$ |
| (d) $\lim_{x \rightarrow 0^-} f(x)$ |
| (e) $\lim_{x \rightarrow 0^+} f(x)$ |
| (f) $\lim_{x \rightarrow 0} f(x)$ |
| (g) $\lim_{x \rightarrow 1^-} f(x)$ |
| (h) $\lim_{x \rightarrow 1^+} f(x)$ |
| (i) $\lim_{x \rightarrow 1} f(x)$ |

3. Sketch the graph of $f(x) = \begin{cases} -x & x < -1 \\ 3 & x = -1 \\ x^2 & -1 < x < 1 \\ x + 1 & x \geq 1 \end{cases}$

Determine the values of a for which $\lim_{x \rightarrow a} f(x)$ exists.

4. Sketch the graph of $f(x) = \begin{cases} 1 - \sin x & x < 0 \\ \cos x & 0 \leq x \leq \pi/4 \\ \sin x & x > \pi/4 \end{cases}$

Determine the values of a for which $\lim_{x \rightarrow a} f(x)$ exists.

5. Sketch the graph of a function that satisfies the following conditions:

- $\lim_{x \rightarrow -1} f(x) = \infty$
- $\lim_{x \rightarrow 1^-} f(x) = 2$
- $\lim_{x \rightarrow 1^+} f(x) = -1$
- $f(1) = 0$

6. Sketch the graph of a function that satisfies the following conditions:

- $\lim_{x \rightarrow 0} f(x) = 1$
- $\lim_{x \rightarrow 2^-} f(x) = -\infty$
- $\lim_{x \rightarrow 2^+} f(x) = 4$
- $f(0) = 0$
- $f(2) = 2$

7. Evaluate the infinite limit: $\lim_{x \rightarrow 2^-} \frac{x-3}{x-2}$

8. Evaluate the infinite limit: $\lim_{x \rightarrow 3^-} \frac{x}{(3-x)^2}$

9. Evaluate the infinite limit: $\lim_{x \rightarrow -1^-} \frac{\sqrt{x+2}}{(x+1)^3}$

10. Find the vertical asymptotes of the function $f(x) = \frac{x^2 + 2x}{x(x^2 - 4)^2}$