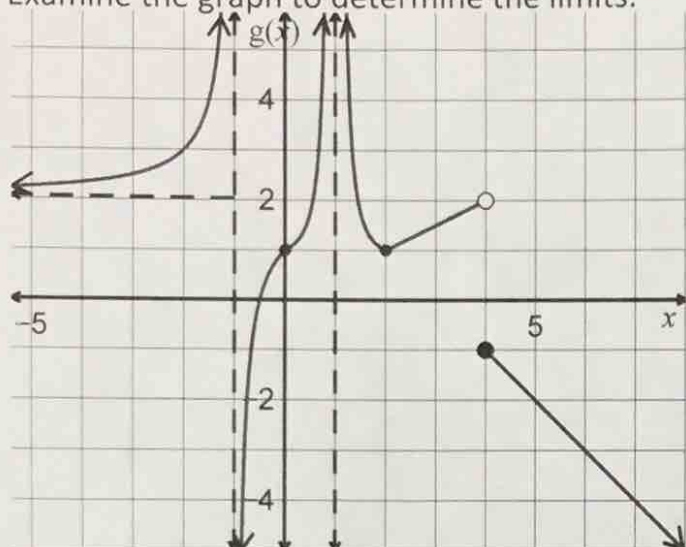


1. Examine the graph to determine the limits.

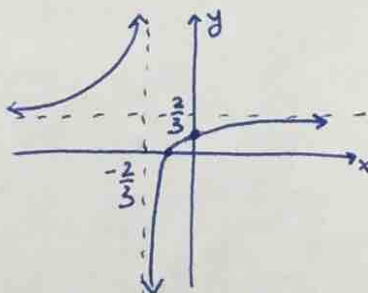


- a. $\lim_{x \rightarrow -1^-} g(x) = \infty$
- b. $\lim_{x \rightarrow -1^+} g(x) = -\infty$
- c. $\lim_{x \rightarrow -1} g(x) = \text{DNE}$
- d. $\lim_{x \rightarrow 1^-} g(x) = \infty$
- e. $\lim_{x \rightarrow 1^+} g(x) = \infty$
- f. $\lim_{x \rightarrow 1} g(x) = \infty$
- g. $\lim_{x \rightarrow -\infty} g(x) = 2$
- h. $\lim_{x \rightarrow \infty} g(x) = -\infty$
- i. $\lim_{x \rightarrow 4^-} g(x) = 2$
- m. $\lim_{x \rightarrow 4^+} g(x) = -1$
- n. $\lim_{x \rightarrow 4} g(x) = \text{DNE}$

2. a. List the asymptotes of $f(x) = \frac{1+2x}{3x+2}$.

$x = -\frac{2}{3}, y = \frac{2}{3}$

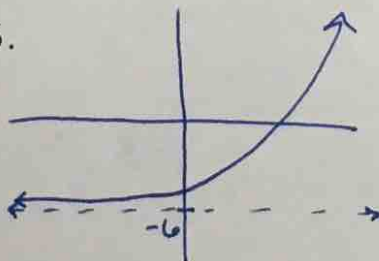
b. Sketch the graph of $f(x)$.



Hence determine the following limits.

- c. $\lim_{x \rightarrow \infty} \frac{1+2x}{3x+2} = \frac{2}{3}$
- d. $\lim_{x \rightarrow -\infty} \frac{1+2x}{3x+2} = \frac{2}{3}$
- e. $\lim_{x \rightarrow \frac{2}{3}^-} \left(\frac{1+2x}{3x+2} \right) = \infty$
- f. $\lim_{x \rightarrow \frac{2}{3}^+} \left(\frac{1+2x}{3x+2} \right) = -\infty$

3. a. Sketch the graph of $g(x) = e^x - 6$.



Hence discuss the value and geometric interpretation of:

- b. $\lim_{x \rightarrow -\infty} (e^x - 6) = -6$
- c. $\lim_{x \rightarrow \infty} (e^x - 6) = \infty$