

Limits to Infinity

1. Find the limit:

a. $\lim_{x \rightarrow \infty} \frac{x^3 - 3x^2 + 5x - 10}{10x^2 + 7x - 3}$

b. $\lim_{x \rightarrow -\infty} \frac{x^3 - 3x^2 + 5x - 10}{10x^2 + 7x - 3}$

c. $\lim_{x \rightarrow \infty} \frac{10x^2 + 7x - 3}{x^3 - 3x^2 + 5x - 10}$

d. $\lim_{x \rightarrow \infty} \frac{3x^3 + 8x + 9}{5x^3 - 8x^2 - 10x + 1}$

e. $\lim_{x \rightarrow -\infty} \frac{2x - 5}{x + 5}$

2. Determine the end behavior (left and right) for the following functions:

a. $y = e^{-x}$

b. $y = \sin x$

c. $y = -\frac{5}{x-3}$

d. $y = \frac{|x+3|}{x+3}$