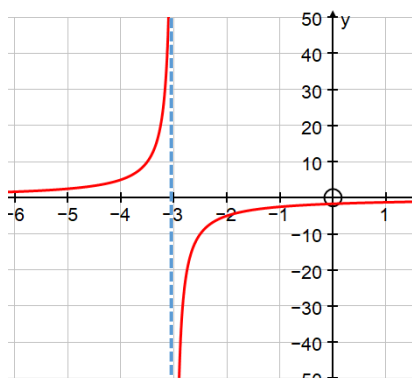


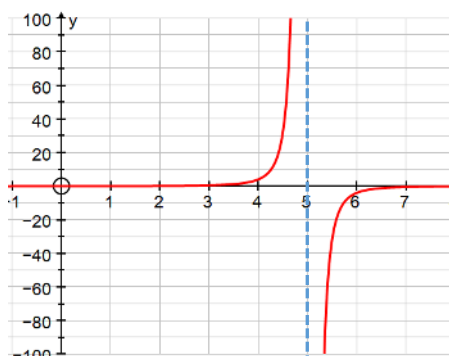
# Introduction to limits - Answers

Evaluate each of the following limits, draw a sketch to verify your answer:

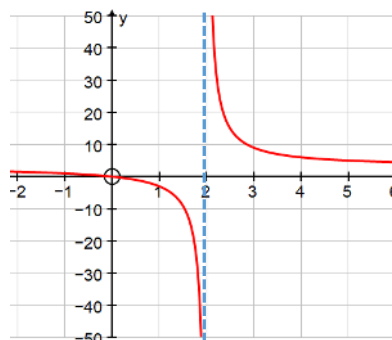
1.  $\lim_{x \rightarrow 3^+} \frac{-5}{x+3} = -\infty$      $\lim_{x \rightarrow 3^-} \frac{-5}{x+3} = \infty$      $\lim_{x \rightarrow 3} \frac{-5}{x+3}$  **does not exist**



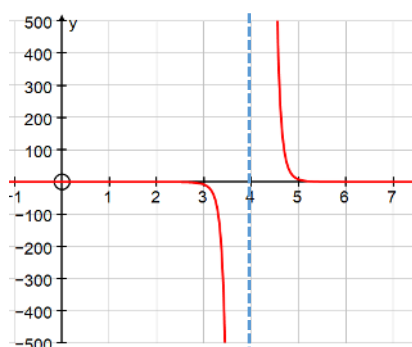
2.  $\lim_{x \rightarrow 5^+} \frac{4}{(5-x)^3} = -\infty$      $\lim_{x \rightarrow 5^-} \frac{4}{(5-x)^3} = \infty$      $\lim_{x \rightarrow 5} \frac{4}{(5-x)^3}$  **does not exist**



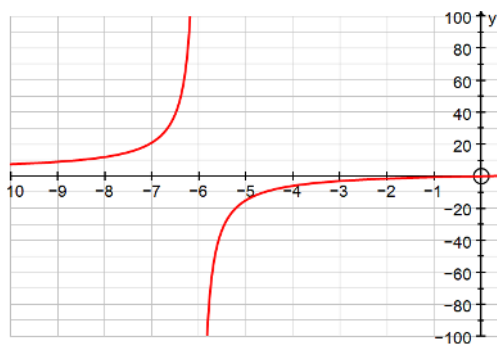
3.  $\lim_{x \rightarrow 2^+} \frac{3x}{x-2} = \infty$      $\lim_{x \rightarrow 2^-} \frac{3x}{x-2} = -\infty$      $\lim_{x \rightarrow 2} \frac{3x}{x-2}$  **does not exist**



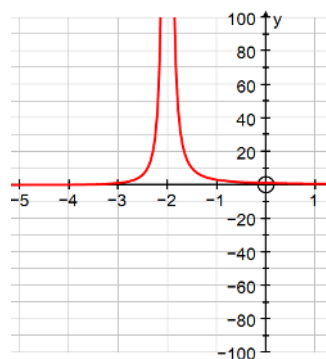
4.  $\lim_{x \rightarrow 4^+} \frac{8}{(x-4)^7} = -\infty$      $\lim_{x \rightarrow 4^-} \frac{8}{(x-4)^7} = \infty$      $\lim_{x \rightarrow 4} \frac{8}{(x-4)^7}$  **does not exist**



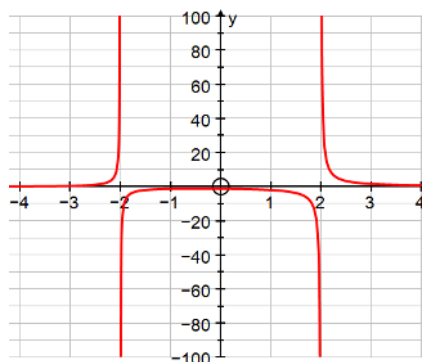
5.  $\lim_{t \rightarrow -6^+} \frac{3t}{6+t} = \infty$   $\lim_{t \rightarrow -6^-} \frac{3t}{6+t} = -\infty$   $\lim_{t \rightarrow -6} \frac{3t}{6+t}$  does not exist



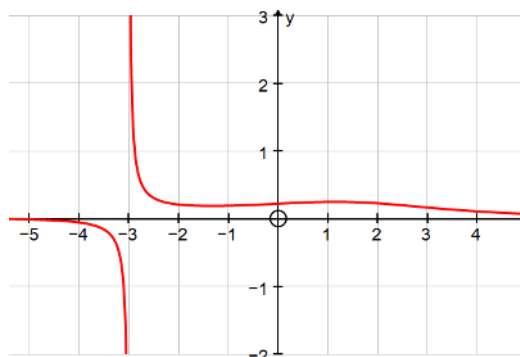
6.  $\lim_{z \rightarrow -2^+} \frac{z+4}{(z+2)^2} = \infty$   $\lim_{z \rightarrow -2^-} \frac{z+4}{(z+2)^2} = \infty$   $\lim_{z \rightarrow -2} \frac{z+4}{(z+2)^2} = \infty$



7.  $\lim_{x \rightarrow 2^+} \frac{x+5}{x^2-4} = -\infty$   $\lim_{x \rightarrow 2^-} \frac{x+5}{x^2-4} = \infty$   $\lim_{x \rightarrow 2} \frac{x+5}{x^2-4}$  does not exist



8.  $\lim_{x \rightarrow 3^+} \frac{6+x}{x^3+27} = \infty$   $\lim_{x \rightarrow 3^-} \frac{6+x}{x^3+27} = -\infty$   $\lim_{x \rightarrow 3} \frac{6+x}{x^3+27}$  does not exist



9. Find all the vertical asymptotes of this function.

$$f(x) = \frac{6x}{(10-4x)^4} \quad x = \frac{5}{2}$$

10. Find all the vertical asymptotes of this function.

$$g(x) = \frac{-5}{(x+7)(x-4)} \quad x = -7; x = 4$$