

Find a power function end behavior model.

$$1) y = \frac{6x^2 + x - 1}{x^3 - 9x^2}$$

$$A) y = \frac{x}{6}$$

$$B) y = 6x$$

$$C) y = \frac{6}{x}$$

$$D) y = \frac{6x + 1}{x^2 - 9x}$$

Find the limit, if it exists.

$$2) \lim_{x \rightarrow \infty} \frac{x^2 - 4x + 17}{x^3 + 9x^2 + 8}$$

$$A) \frac{17}{8}$$

$$B) \infty$$

$$C) 1$$

$$D) 0$$

$$3) \lim_{x \rightarrow \infty} \frac{-12x^2 + 8x + 9}{-15x^2 + 2x + 8}$$

$$A) \frac{9}{8}$$

$$B) \frac{4}{5}$$

$$C) \infty$$

$$D) 1$$

$$4) \lim_{x \rightarrow -\infty} \frac{4x^3 + 3x^2}{x - 6x^2}$$

$$A) \infty$$

$$B) -\frac{1}{2}$$

$$C) -\infty$$

$$D) 4$$

Find the limit.

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

$$A) -\infty$$

$$B) \infty$$

$$C) -1/2$$

$$D) 1/2$$

Find the limit of  $f(x)$  as (a)  $x \rightarrow \infty$ , (b)  $x \rightarrow \infty$ , (c)  $x \rightarrow 0^-$ , and (d)  $x \rightarrow 0^+$ .

$$6) f(x) = \begin{cases} \frac{3x - 4}{2x - 2}, & x \leq 0 \\ \frac{1}{x^2}, & x > 0 \end{cases}$$

Find a value for  $a$  so that the function  $f(x)$  is continuous.

$$7) f(x) = \begin{cases} x^2 + x + a, & x < -4 \\ x^3, & x \geq -4 \end{cases}$$

Determine the limit algebraically, if it exists.

$$8) \lim_{x \rightarrow 2} \frac{x^2 + 3x - 10}{x^2 - 4}$$

$$9) \lim_{x \rightarrow 0} \frac{\frac{1}{x+10} - \frac{1}{10}}{x}$$