

Exercise 12

Evaluate the limit, if it exists.

$$\lim_{x \rightarrow -3} \frac{x^2 + 3x}{x^2 - x - 12}$$

Solution

Factor the numerator and denominator and cancel the common factors.

$$\lim_{x \rightarrow -3} \frac{x^2 + 3x}{x^2 - x - 12} = \lim_{x \rightarrow -3} \frac{x(x + 3)}{(x - 4)(x + 3)} = \lim_{x \rightarrow -3} \frac{x}{x - 4} = \frac{-3}{-7} = \frac{3}{7}$$