Exercise 6

Find the limit.

$$\lim_{x \to 1^+} \frac{x^2 - 9}{x^2 + 2x - 3}$$

Solution

Plug in 1 for x to evaluate the limit.

$$
\begin{aligned}
\lim_{x \to 1^+} \frac{x^2 - 9}{x^2 + 2x - 3} &= \frac{(1)^2 - 9}{(1)^2 + 2(1) - 3} \\
&= \frac{-8}{0} \\
&= -\infty
\end{aligned}
$$

Note that because it's $x \to 1^+$, the denominator is positive rather than negative, which makes the result $-\infty$.