

Find the limit algebraically. No calculators.

1.
$$\lim_{x \rightarrow 4} \frac{4-x}{x-1}$$

2.
$$\lim_{x \rightarrow \frac{\pi}{4}} \frac{4x}{\tan x}$$

3.
$$\lim_{x \rightarrow 0} \frac{1 - \cos x}{\sin x}$$

4.
$$\lim_{x \rightarrow 2} \frac{x^2 + 2x - 8}{x^2 - 4}$$

5.
$$\lim_{x \rightarrow 0} \frac{x}{x^2 - x}$$

6.
$$\lim_{x \rightarrow 0} \frac{\sin x}{5x}$$

7.
$$\lim_{t \rightarrow 0} \frac{\tan^2 t}{t}$$

8.
$$\lim_{x \rightarrow 10^+} \frac{|x-10|}{x-10}$$

9.
$$\lim_{x \rightarrow -2} \frac{x^3 + 8}{x + 2}$$

10.
$$\lim_{x \rightarrow 0} \frac{\frac{1}{3+x} - \frac{1}{3}}{x}$$

11.
$$\lim_{x \rightarrow 2} \frac{\frac{1}{2} + \frac{1}{x-4}}{x-2}$$

12.
$$\lim_{x \rightarrow \frac{1}{3}} \frac{3 + \frac{1}{x}}{6x + 2}$$