

Exercise 1 Calculate the following limits.

$$\lim_{x \rightarrow -9} \frac{\sqrt{25+x}-5}{x} = \boxed{\frac{1}{9}}$$

$$\lim_{x \rightarrow 3} \frac{4}{x^2-4} = \boxed{\frac{4}{5}}$$

$$\lim_{x \rightarrow 3} \frac{|x-5|}{x-5} = \boxed{-1}$$

$$\lim_{x \rightarrow 8} \frac{|x-5|}{x-5} = \boxed{1}$$

$$\lim_{x \rightarrow \pi} \frac{\sin x}{x} = \boxed{0}$$

$$\lim_{x \rightarrow \pi} \frac{\cos x}{x} = \boxed{-\frac{1}{\pi}}$$

$$\lim_{x \rightarrow 0} \frac{2^x}{x-3} = \boxed{-\frac{1}{3}}$$

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\cos x}{x+4x^2} = \boxed{0}$$

$$\lim_{x \rightarrow 1} \frac{-e^x}{x+4x^2} = \boxed{-\frac{e}{5}}$$