

Exercise 17

Evaluate the limit, if it exists.

$$\lim_{h \rightarrow 0} \frac{(-5 + h)^2 - 25}{h}$$

Solution

Expand the numerator and cancel the common factors.

$$\lim_{h \rightarrow 0} \frac{(-5 + h)^2 - 25}{h} = \lim_{h \rightarrow 0} \frac{(25 - 10h + h^2) - 25}{h} = \lim_{h \rightarrow 0} \frac{-10h + h^2}{h} = \lim_{h \rightarrow 0} (-10 + h) = -10$$