

► **Limite Trigonométrico Fundamental**

**Exercício 1** Calcule os limites abaixo.

$$\begin{array}{lllll} \text{a) } \lim_{x \rightarrow 0} \frac{\sin(3x)}{x} & \text{b) } \lim_{x \rightarrow 0} \frac{\sin(5x)}{\sin(x)} & \text{c) } \lim_{x \rightarrow 0} \frac{\sin^2\left(\frac{x}{2}\right)}{x^2} & \text{d) } \lim_{x \rightarrow 0} \frac{\tan(2x)}{x} & \text{e) } \lim_{x \rightarrow 0} \frac{1 - \cos(2x)}{x \sin(x)} \\ \text{f) } \lim_{x \rightarrow 0} \frac{\sin(3x)}{\sqrt{x+2} - \sqrt{2}} & \text{g) } \lim_{x \rightarrow 0} \frac{1 - \cos(2x)}{x \sin(x)} & \text{h) } \lim_{x \rightarrow 0} \frac{3}{x \csc(x)} & \text{i) } \lim_{x \rightarrow 0} \frac{\sqrt{1 - \cos(x)}}{\tan(2x)} \\ \text{j) } \lim_{x \rightarrow 0} \frac{\sqrt{1 - \cos(x)}}{\tan(2x)} & \text{k) } \lim_{x \rightarrow 0} \frac{\sin(x) + 1 - \cos(x)}{x} & \text{l) } \lim_{x \rightarrow \frac{\pi}{4}} \frac{\sin(4x)}{1 - \sqrt{2} \cos(x)} \end{array}$$

Notação:  $\cot$  = cotangente,  $\tan$  = tangente,  $\csc$  = cossecante e  $\sin$  = seno