

# MA22 - Unidade 5 - Exercícios

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# O Limite Trigonométrico Fundamental

## Exercícios

1) Calcule  $\lim_{x \rightarrow 0} x \operatorname{sen} \frac{1}{x}$ .

2) Calcule  $\lim_{x \rightarrow a} (x^n - a^n) \cos \frac{1}{x-a}$ .

3) Calcule

a)  $\lim_{x \rightarrow 0} \frac{\operatorname{sen} ax}{bx}$ ;      b)  $\lim_{x \rightarrow 0} \frac{\operatorname{sen} ax}{\operatorname{sen} bx}$ .

Calcule os seguintes limites:

❶  $\lim_{x \rightarrow 1} \frac{\operatorname{sen}(x-1)}{x^2-1}$ ;

❷  $\lim_{x \rightarrow 1} \frac{\operatorname{sen}(x^3-1)}{x^2-1}$ ;

❸  $\lim_{x \rightarrow 1} \frac{\operatorname{sen}(x^n-1)}{x^m-1}$ .

Calcule  $\lim_{x \rightarrow 0} \frac{\operatorname{sen} ax}{\operatorname{tg} bx}$ .

Calcule  $\lim_{x \rightarrow 0} \left( \frac{1}{\operatorname{sen} x} - \frac{1}{\operatorname{tg} x} \right)$ .

Calcule  $\lim_{x \rightarrow \frac{\pi}{2}} \left( \frac{\pi}{2} - x \right) \operatorname{tg} x$ .

Calcule  $\lim_{x \rightarrow \frac{\pi}{4}} \frac{\cos x - \operatorname{sen} x}{\operatorname{tg} x}$ .