O número de Neper
↪ É um número irracional e representa-se por **e** ($\approx 2,7$).

Limites Conhecidos

$$Lim(1+\frac{1}{n})^n = e \qquad \begin{array}{c} k \in \mathbb{R} \ e \ u_n \to \pm\infty \\ Lim(1+\frac{k}{u})^u = e^k \end{array}$$

- Exemplo 1

$$\lim(1+\frac{3}{n})^{n+2} = \lim(1+\frac{3}{n})^n \times \lim(1+\frac{3}{n})^2 = e^3 \times 1 = e^3$$

- Exemplo 2

$$\lim(1+\frac{2}{n+1})^n = \lim(1+\frac{2}{n+1})^{n+1-1} = \lim(1+\frac{2}{n+1})^{n+1} \times \lim(1+\frac{2}{n+1})^{-1} = e^2 \times 1 = e^2$$

- Exemplo 3

$$\lim(1-\frac{1}{n})^{3n} = \lim[(1-\frac{1}{n})^n]^3 = [\lim(1-\frac{1}{n})^n]^3 = (e^{-1})^3 = e^{-3}$$

- Exemplo 4

$$\lim(\frac{3n-2}{3n-4})^{4n} = \frac{\lim(\frac{3n-2}{3n})^{4n}}{\lim(\frac{3n-4}{3n})^{4n}} = \frac{\lim(1-\frac{2}{3n})^{4n}}{\lim(1-\frac{4}{3n})^{4n}} = \frac{[\lim(1-\frac{2}{3n})^n]^4}{[\lim(1-\frac{4}{3n})^n]^4} = \frac{[\lim(1-\frac{2}{3n})^{3n}]^{\frac{4}{3}}}{[\lim(1-\frac{4}{3n})^{3n}]^{\frac{4}{3}}} = \frac{(e^{-2})^{\frac{4}{3}}}{(e^{-4})^{\frac{4}{3}}} = \frac{e^{-\frac{8}{3}}}{e^{-\frac{16}{3}}} =$$

$$= e^{\frac{8}{3}}$$