

Exercícios para a

3ª aula

1. Determine, se existirem, os limites das seguintes sucessões.

$$(a) x_n = \frac{2n+1}{3n-1} \quad (b) x_n = \frac{2n+3}{3n+(-1)^n} \quad (c) x_n = \frac{n+\cos(n)}{2n-1}$$

$$(d) x_n = \sqrt{n} - \frac{n}{\sqrt{n}+2} \quad (e) x_n = \frac{\sqrt{n^4-1}}{n^2+3}$$

$$(f) x_n = \cos(n! \pi) \quad (g) x_n = \frac{\sqrt{n+1}}{2n+1} \quad (h) x_n = \frac{n}{n+1} - \frac{n+1}{n}$$

$$(i) x_n = \sqrt{n+1} - \sqrt{n} \quad (j) x_n = n \left(\sqrt{n^2+1} - n \right) \quad (k) x_n = \frac{2^{2n} - 3^n}{2^n - 3^{2n}}.$$

2. Determine, se existirem, os limites das seguintes sucessões.

$$(a) x_n = n - \frac{n^2}{n+2} \quad (b) x_n = \frac{n^2-2}{5n^2} \quad (c) x_n = \frac{n-1}{\sqrt{n^2+1}}$$

$$(d) x_n = \frac{n^2-1}{\sqrt{3n^4+3}} \quad (e) x_n = \frac{n^2}{n+1} - \frac{n^2+1}{n} \quad (f) x_n = \frac{\cos(2n)}{n^2}$$

$$(g) x_n = \sqrt{n(n+1)} - \sqrt{n(n-1)} \quad (h) x_n = \frac{2^n+1}{2^{n+1}-1} \quad (i) x_n = \frac{(3^n)^2}{1+7^n}.$$