AM3C – Sucessões

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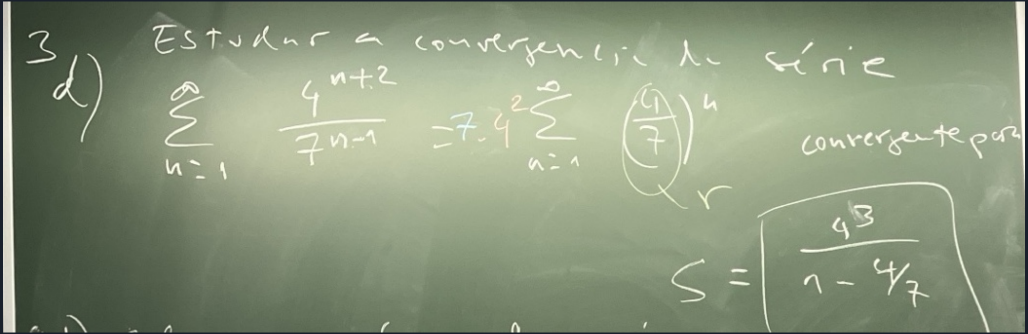
Conteúdo

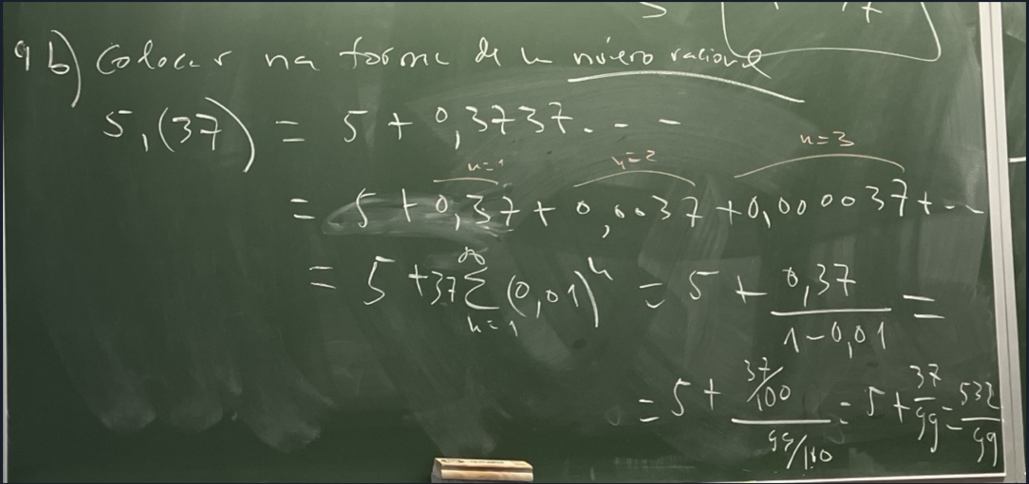
Q3 d.

Resposta



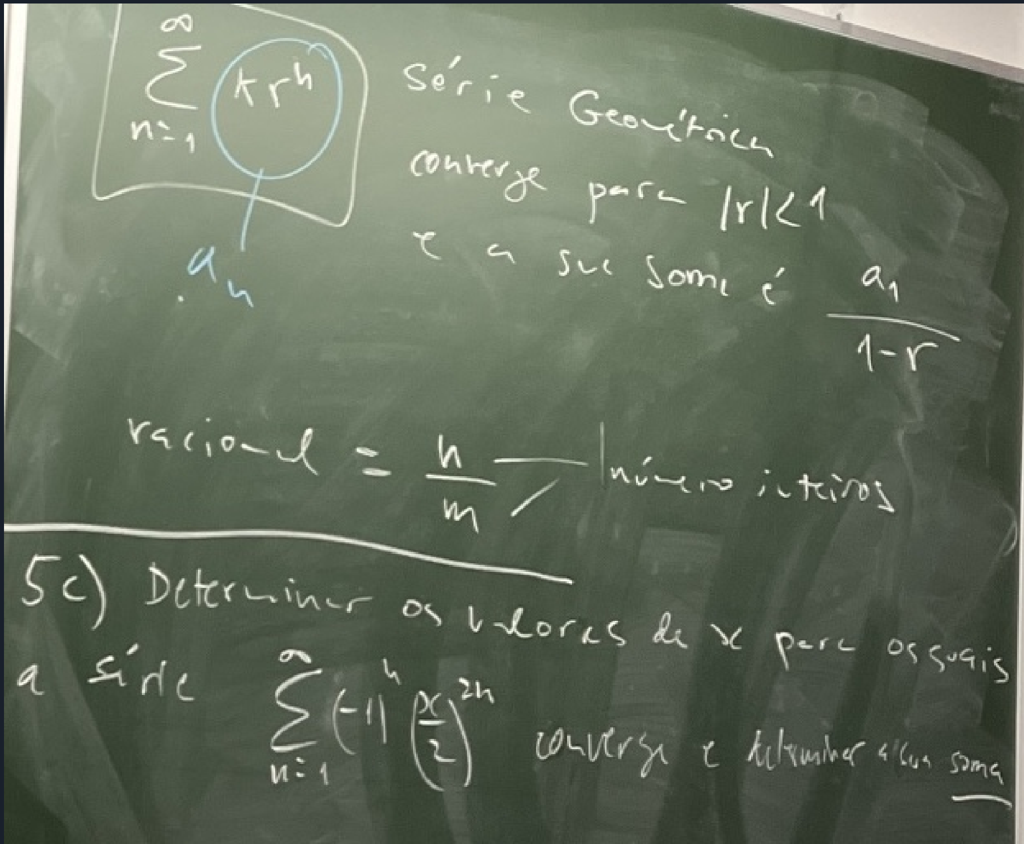
Q4 b.

Resposta



Q5 c.

Resposta

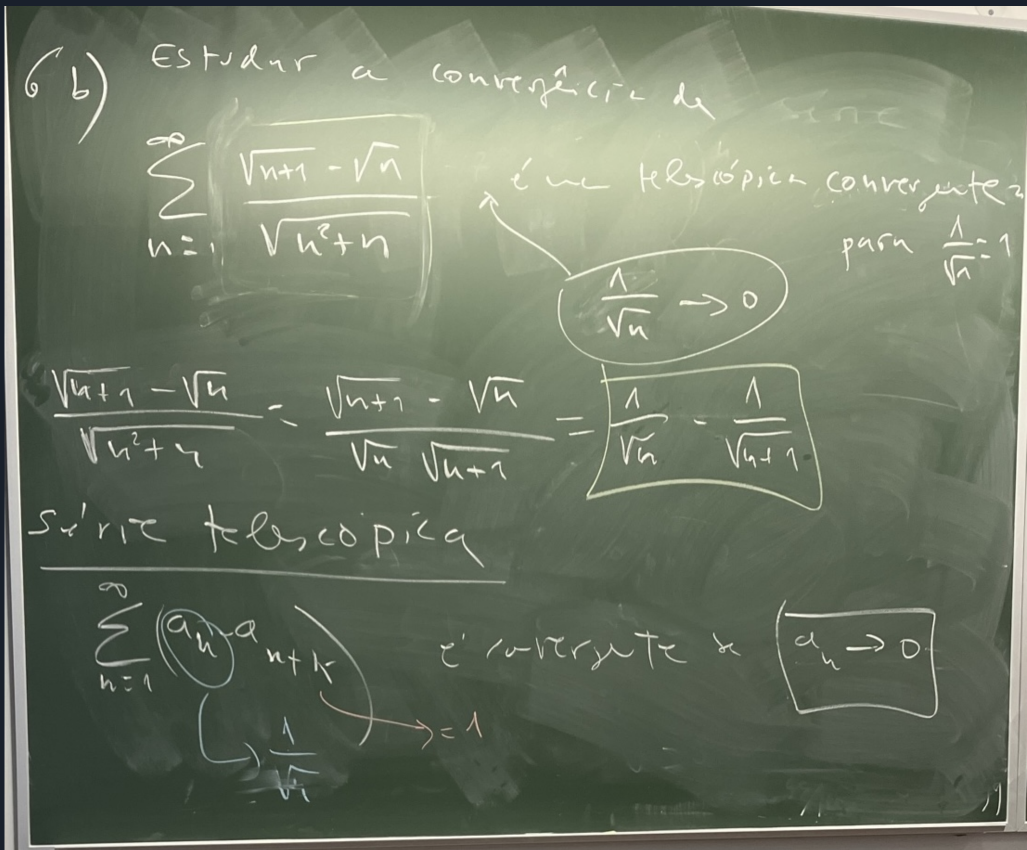


Q6 b.

Estudar a convergencia de:

$$\int_{n=1}^{\infty} \frac{\sqrt{n+1}-\sqrt{n}}{\sqrt{}}$$

Resposta



$$\sum_{n=1}^{\infty} \frac{\sqrt{n+1}-\sqrt{n}}{\sqrt{n^2+n}}$$

$$\frac{\sqrt{n+1}-\sqrt{n}}{\sqrt{n^2+1}} = \frac{\sqrt{n+1}-\sqrt{n}}{\sqrt{n}\,\sqrt{n+1}} = \frac{1}{\sqrt{n}} - \frac{1}{\sqrt{n+1}} = a_n - a_{n+k} : a_n = \frac{1}{\sqrt{n}} \wedge k = 1$$

Serie telescópica:

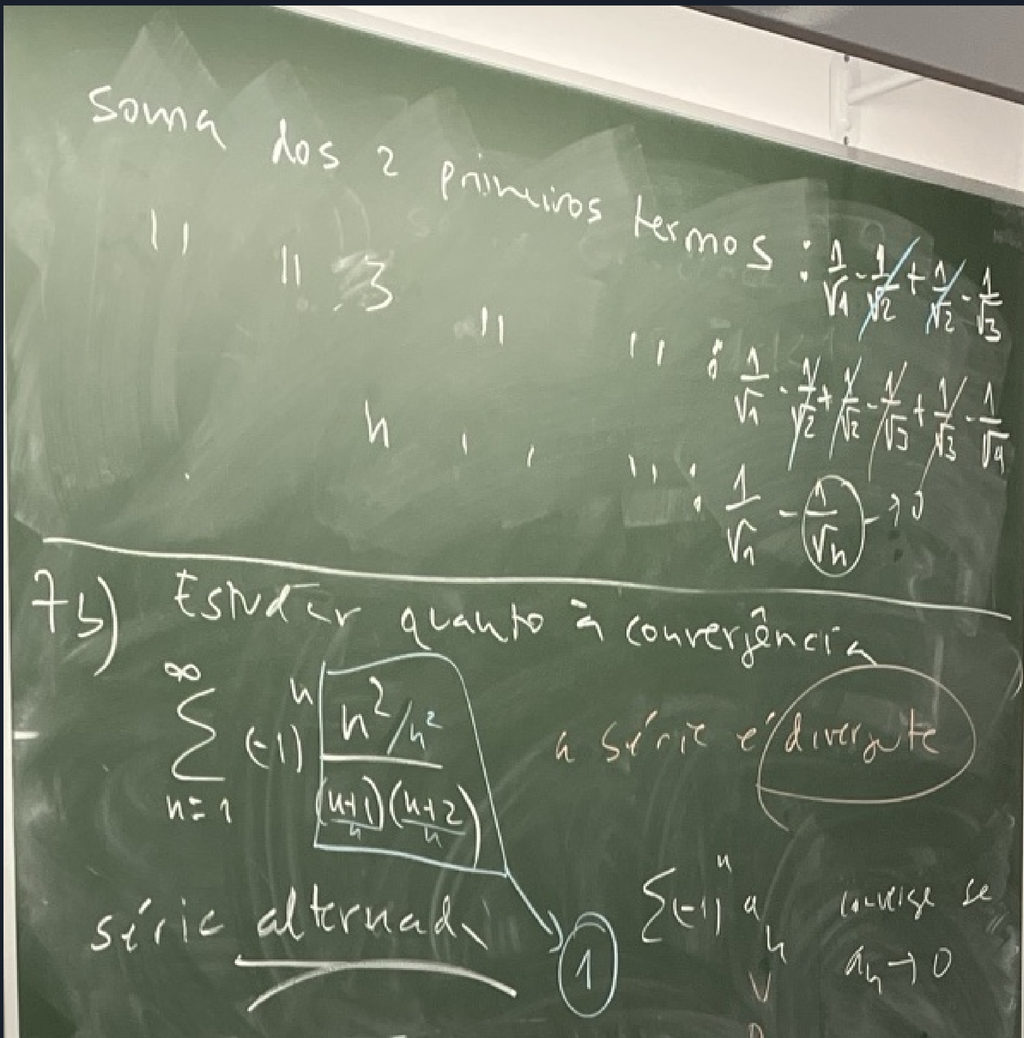
$\displaystyle\sum_{n=1}^{\infty} (a_n - a_{n+k})$ Converge se $a_n \to 0$

Q7 b.

Estudar o qudro de divergencia de

$$\sum_{n=1}^{\infty} (-1)^n \frac{n^2}{(n+1)(n+2)}$$

Resposta



Q9 b.

Use o critério do integral para estudar a convergencia de

$$\sum_{n=1}^{\infty} \frac{1}{n\sqrt{\log n - 1}}$$

Resposta

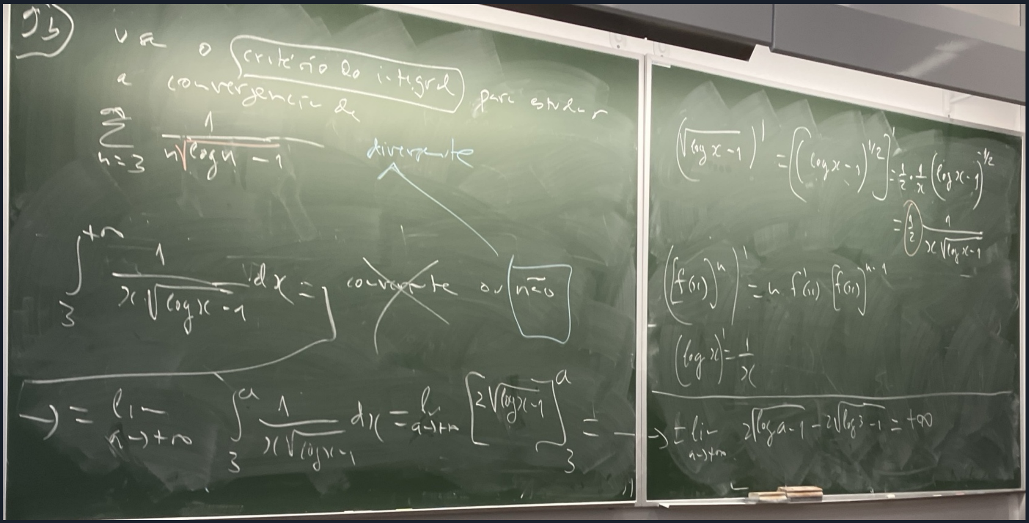
$$\sum_{n=1}^{\infty} \frac{1}{n\sqrt{\log n - 1}}$$

Converge se

$$\int_3^{\infty} \frac{\mathrm{d}x}{x\sqrt{\log x - 1}} = \int_3^{\infty} 2\left(\sqrt{\log(x) - 1}\right)' \mathrm{d}x = 2\left(\sqrt{\log(\infty) - 1} - \sqrt{\log(3) - 1}\right) = +\infty$$

$\therefore$ Não converge

$$\frac{\mathrm{d}}{\mathrm{d}x}\sqrt{\log(x) - 1} = \cdots = \frac{1}{2}\frac{1}{\sqrt{\log x - 1}}$$



Q10 c.

$$\sum_{n=3}^{\infty} \frac{1}{\log(n)}$$

Resposta

Comparar com $1/n$ usando o criterio da comparação