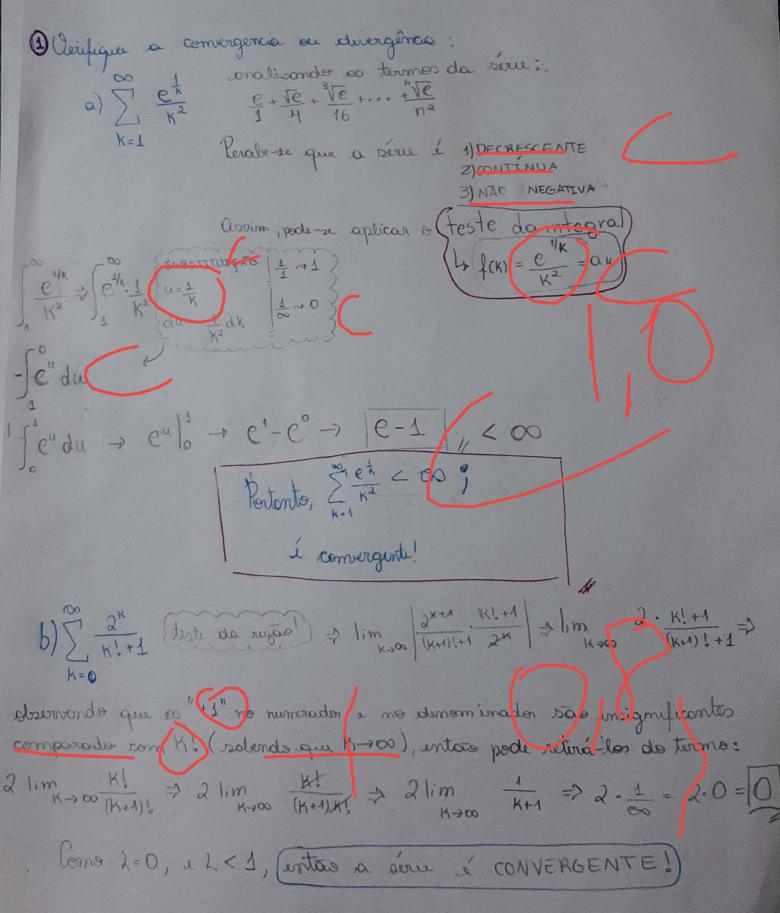
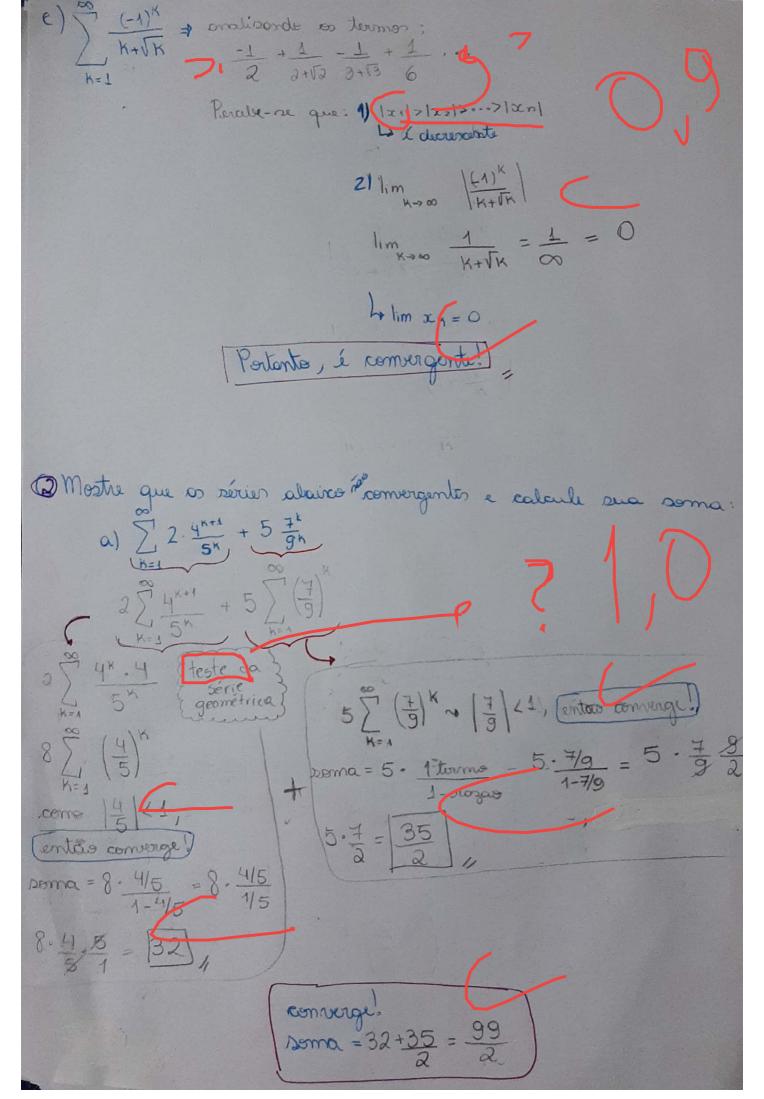
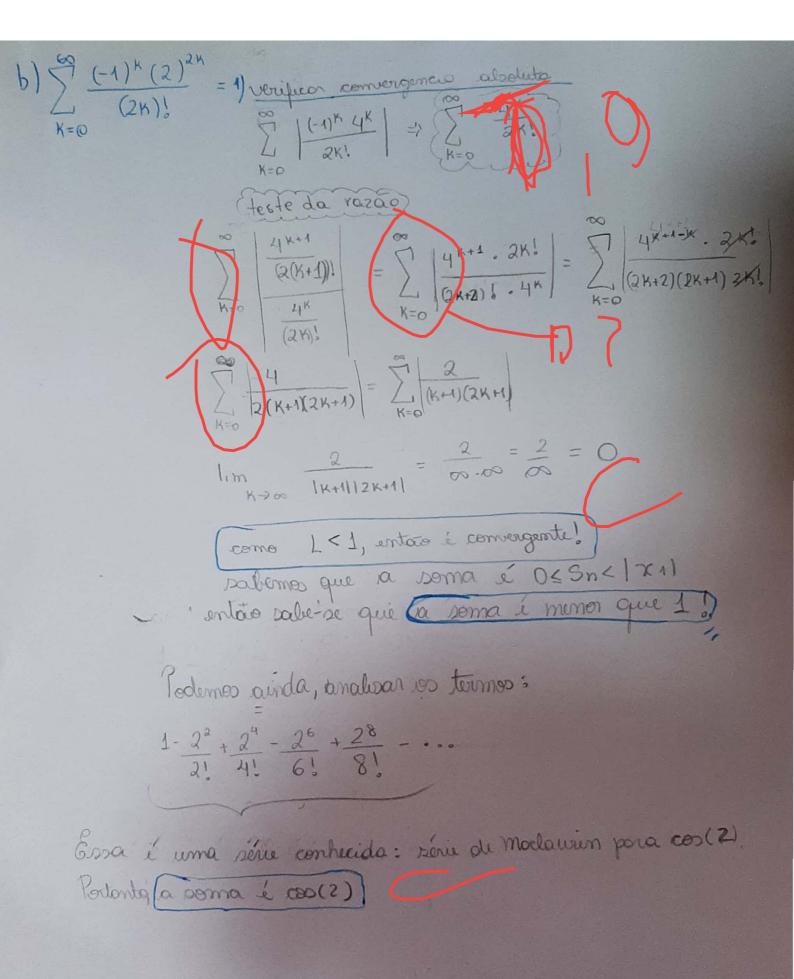
Prova II CDI 2001 - B aluma fulia Retor







3 Duda a série de poléneiros $\sum_{k,3h} (x+z)^k$, otetermine: a) ren rois de convergênce : relim anni xo-r<x<xo+r 2 an (x-to) " 1= lim

K+00 | (K+1) 3K+1 => lim

K+00 | K+1) 3K-3 | => 3 lim

K+1

K+100 | K+1) 3K-3 | => 3 lim

K+100 | K+10 3 lim 1+ 1 => 3. (lim + 10 1 + lim 1 1) = 3 . E : dismègres de ceion et 3. b) Calcul o intervalo de convergencio. voirfece extremidades: -2-3 < x < -2+3 pona x=-5 + \(\frac{(-3)^8}{638} -5< x < 1 teste série alternada; > 13/3/27/27/27 5 for portido 2) lim 3KK = lim 1 = 1 lim i = 0 convergente! pora $\kappa = K + \sum_{k=1}^{\infty} \frac{3k}{k3k} = \sum_{k=1}^{\infty} \frac{1}{k}$ é uma siene harmonia, entas diverge. & 1 mas for ports do elocuetri -

(4) Escreva as furções abairos como uma série de potencios contrados em 0: -1< x < 1 a) $f(x) = \frac{x}{(2-x)^3}$ encentrar serie de potêrcia para (1-2) $\frac{1}{(1-x)^3} = \left(\frac{1}{(1-x)^2}\right)^1 = \left(\frac{$ $\frac{2}{(1-x)^3} = 2+6x+12x^2+\cdots = \sum_{k=1}^{\infty} \kappa(x+1)x^{k-1}$ (2(1-等))3=天(1-等)3= $\frac{1}{(1-x^3)} = \sum_{k=1}^{\infty} \frac{K(k+1)}{2} x^{k-3} = \sum_{k=1}^{\infty} \frac{(k+1)(k+2)}{2} x^k$ 文 (1-至)3 (4-至) 2º (1-u)3 } $\frac{1}{(1-u)^3} = \frac{1}{3}u + 6u^2 + 10u^3 + ... = \sum_{k=0}^{\infty} \frac{(k+1)(k+2)}{2} \times k$: E reg & chaindatalus $\frac{1}{(1-\frac{x}{2})^3} = 1 + \frac{3x}{2} + \frac{6x^2}{2^2} + \frac{10x^3}{2^3} + \cdots = \sum_{k=0}^{\infty} \frac{(k+1)(k+2)}{2^{k+1}} \times \frac{k}{2^k}$ $\frac{1}{2^3} \cdot \frac{1}{(1-\frac{x}{2})^3} = \frac{1}{2^3} + \frac{3x}{2^4} + \frac{6x^2}{2^6} + \frac{10x^3}{2^6} + \cdots = \frac{\infty}{2^6} \cdot \frac{(x+1)(x+2)}{2^{k+4}} \times x$ $\frac{x}{2^{3}} \cdot \frac{1}{(1-\frac{x}{2})^{3}} = \frac{x}{2^{3}} + \frac{3k^{2}}{2^{4}} + \frac{6x^{3}}{2^{5}} + \frac{10x^{4}}{2^{6}} + \cdots = \sum_{k=1}^{\infty} \frac{(k+1)(k+2)}{2^{k+4}} \times \frac{k+1}{2^{5}}$

1) Exercition a similar of Max Jeanium pora sim(x):
$$\frac{1}{100} = \frac{1}{100} =$$

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5 Com a soma dos sumos primiros termos da série, excentre um valos oproximado pora a integral:

$$\int_0^2 \frac{e^{x^2} - 1 - \chi^2}{a^4}$$

1) Encontror a some de mondaurin pora ex. 4 a porter de fext=ex.

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$$e^{x} = \sum_{n=0}^{\infty} \frac{1}{1} \frac{1}{1} \frac{1}{1} \frac{1}{1} = \sum_{n=0}^{\infty} \frac{x^{n}}{n!} = 1 + x + \frac{x^{2} + x^{3}}{2!} + \cdots$$

trounde x por x2, times.

$$e^{\chi^2} = 1 + \chi^2 + \frac{\chi^4}{2!} + \frac{\chi^6}{3!} + \frac{\chi^8}{4!} + \dots = \sum_{n \neq 0} \frac{\chi^2}{n!}$$

abal abas eta ex-e L'abruarthua

$$e^{x^{2}} - 1 - x^{2} = 1 + x^{2} + x^{4} + x^{6} + \dots - 1 - x^{7}$$

$$e^{x^{2}} - 1 - x^{2} = x^{4} + x^{6} + x^{6} + x^{8} + x^{10} + \dots - 1 - x^{7}$$

$$e^{x^{2}} - 1 - x^{2} = x^{4} + x^{6} + x^{6} + x^{8} + x^{10} + \dots - 1 - x^{7}$$

$$n = 2$$

multipliande 1/x4 de cada lado:

$$\frac{e^{x^{2}}-1-x^{2}}{x^{4}} = \frac{1}{2!} + \frac{x^{2}}{3!} + \frac{x^{4}}{4!} + \frac{x^{6}}{5!} + \cdots$$

$$\int_{0}^{2} \frac{e^{x^{2}}-1-x^{2}}{\alpha^{4}} = \frac{x}{2!} + \frac{x^{3}}{3\cdot 3!} + \frac{x^{5}}{5\cdot 4!} + \frac{x^{7}}{7\cdot 5!} + \frac{x^{9}}{9\cdot 6!} = 0$$

$$\int_{0}^{2} \frac{e^{x^{2}}-1-x^{2}}{\alpha^{4}} = \frac{2}{2!} - 0 + \frac{2^{3}}{3\cdot 3!} + \frac{2^{5}}{5\cdot 4!} = 0 + \cdots$$

Calculande es circo priminos termos:
$$\frac{2}{2!} + \frac{2^3}{3 \cdot 3!} + \frac{2^5}{5 \cdot 4!} + \frac{2^9}{8 \cdot 5!} + \frac{2^9}{9 \cdot 6!} = 1 + \frac{8}{18} + \frac{32}{120} + \frac{128}{960} + \frac{512}{6480} = 1,9235$$