- (1) Determinar el radio de convergencia y el intervalo de convergencia de las siguientes series
 - (a) $\sum_{n=0}^{\infty} \frac{x^n}{\sqrt{n}}$
- (d) $\sum_{n=1}^{\infty} n^n x^n$
- (g) $\sum_{n=0}^{\infty} \frac{1}{n} \left(\frac{x+2}{2} \right)^n$

- (b) $\sum_{n=0}^{\infty} \sqrt{n} x^n$
- (e) $\sum_{n=0}^{\infty} (-1)^n \frac{n^2 x^n}{2^n}$
- (h) $\sum_{n=1}^{\infty} \frac{(-2)^n x^n}{n^{1/4}}$

- (c) $\sum_{n=0}^{\infty} \frac{x^n}{n!}$
- (f) $\sum_{n=1}^{\infty} (-1)^n \frac{x^n}{4^n \ln n}$ (i) $\sum_{n=1}^{\infty} \frac{e^n}{n^3} (4-x)^n$

 $\frac{1}{n-1} \frac{n!}{n-1}$ $\frac{1}{n-1} \frac{n!}{n-1}$ Analizo sus extremos

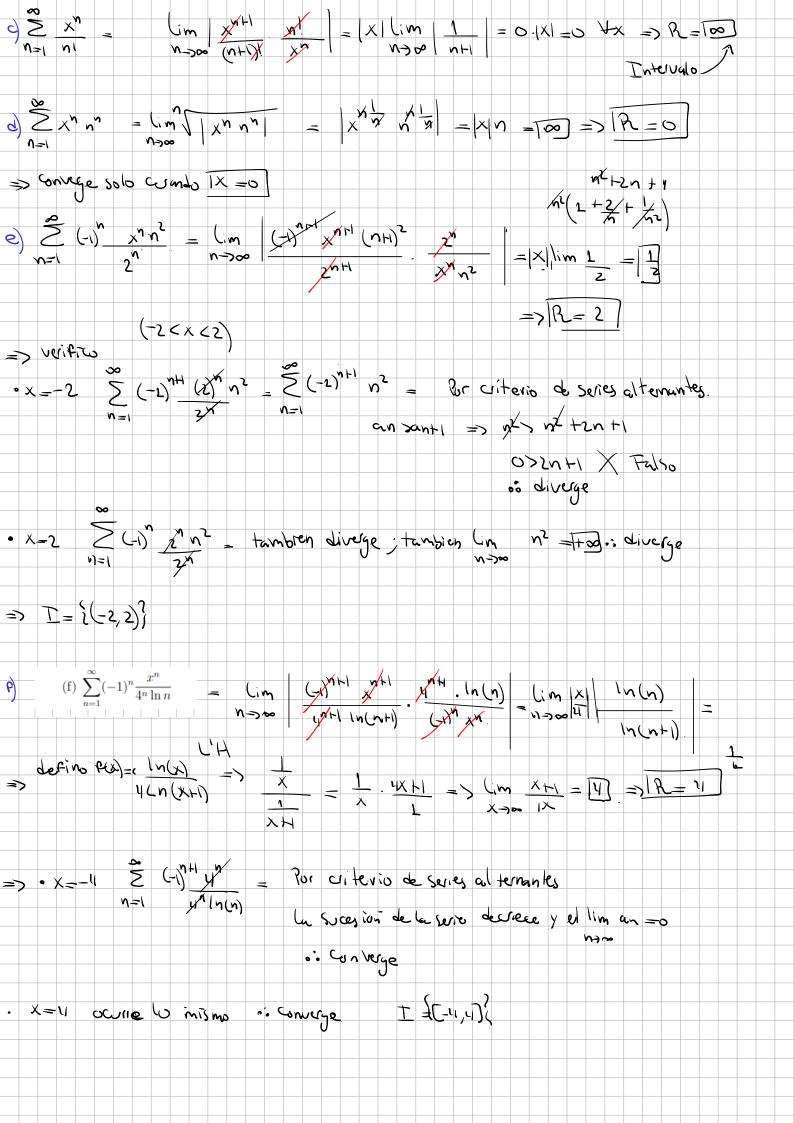
 \Rightarrow $\times = -1$ $\approx \frac{(-1)^n}{\sqrt{n}}$ is for criterio de las series afternantes, $\sin \alpha + \sin \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha + \cos \alpha + \cos \alpha + \cos \alpha = 0$ $\approx \cos \alpha + \cos \alpha +$

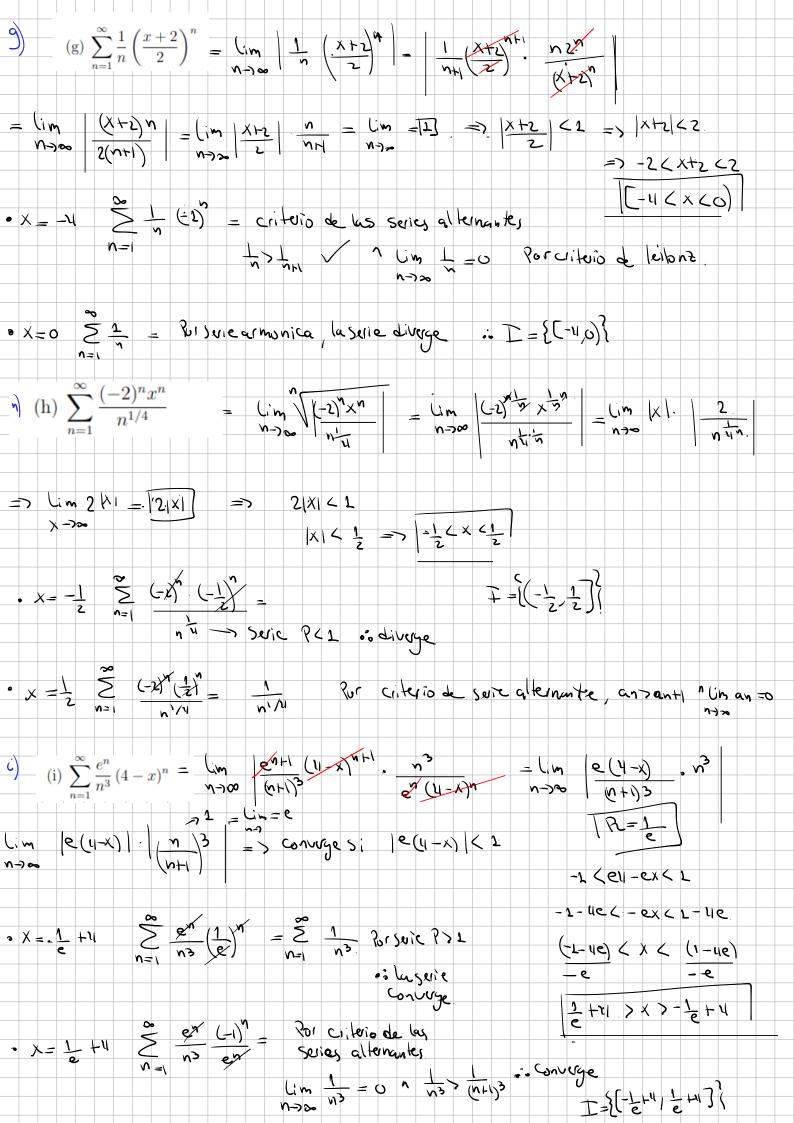
- 1 > 1 esto es certo.

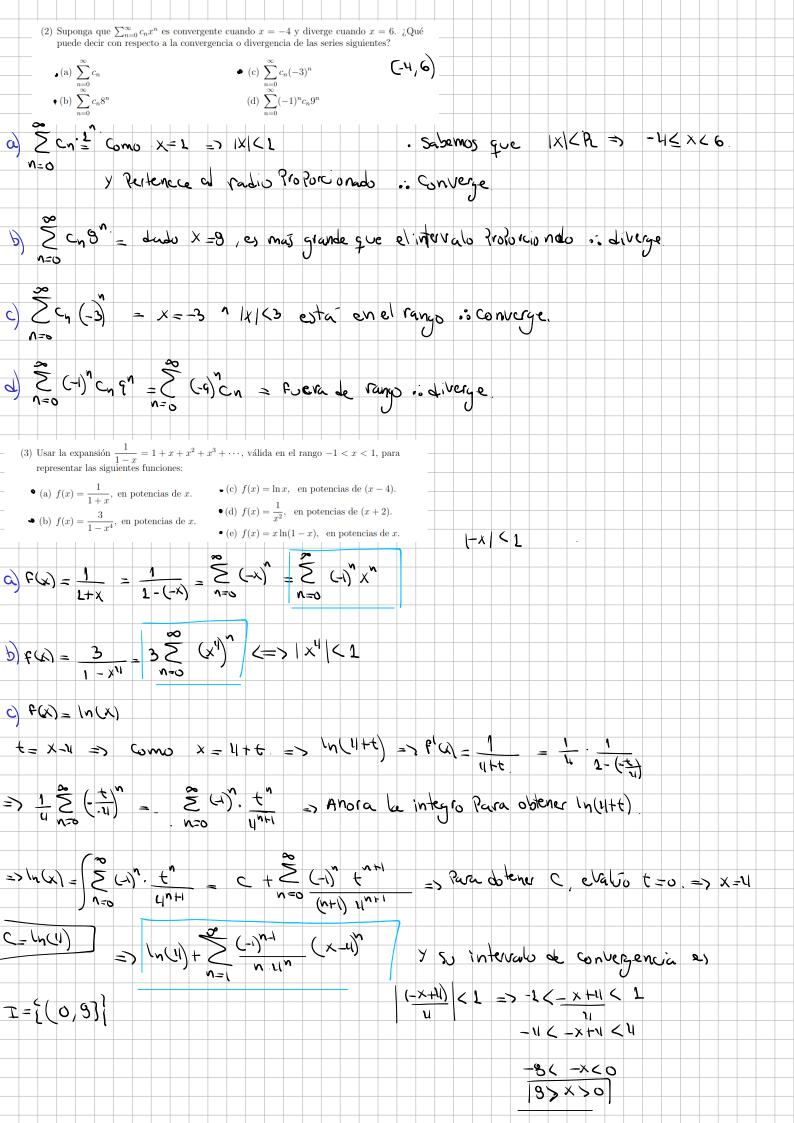
 1/n / 1/n = 10) : converge.

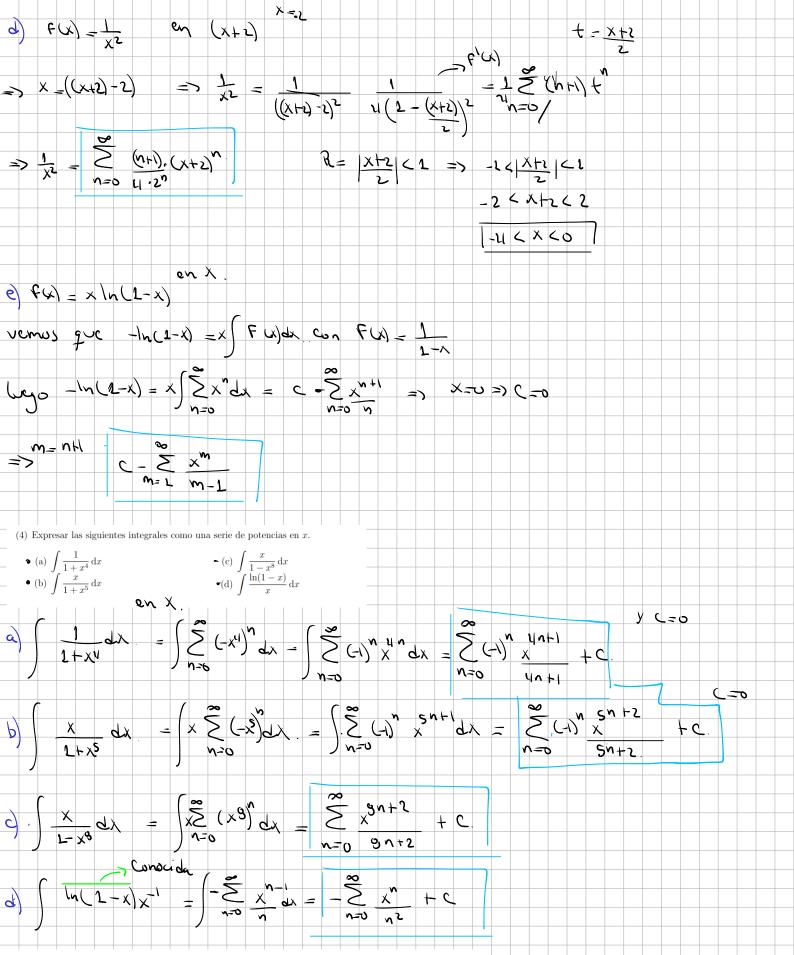
 1/n > 1/n > 1/n = 10) : converge.

- e X=1 \(\frac{1}{n-1} \) => Por soile R SiOR(1 la Serie diverge où diverge.
- .. el intervalo de convergencia esta definido como I = [XE[-1,1]/la seic Converge]
- => Conveye Si (XKL => anulito sus extremos
- X = -1 $\sum_{n=1}^{\infty} \sqrt{n} (-1)^n = Ror Critatio de las series alternantes <math>= \sqrt{n} > \sqrt{n} + 1$ $\times = \sqrt{n} + 1$
- · X=1 \(\frac{2}{5}\tau_{-1} \) = tiende a infinito : diverge









Series de Taylor

 $\sqrt{5}$) Encontrar la representación en serie de Taylor, centrada en a=0, de las siguientes funciones. ¿Para qué valores de x vale la representación?

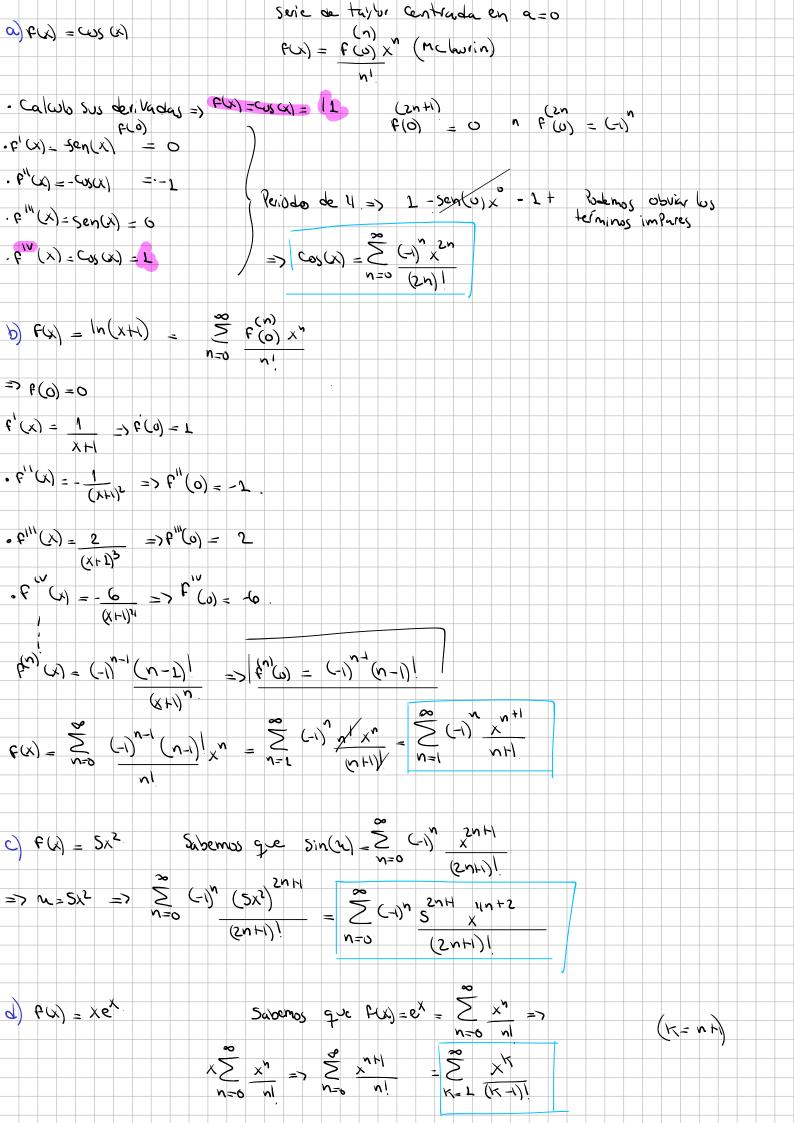
(a)
$$f(x) = \cos(x)$$

• (c)
$$f(x) = \text{sen}(5x^2)$$

• (d) $f(x) = xe^x$

(a)
$$f(x) = \cos(x)$$

(b) $f(x) = \ln(1+x)$



	•(6)						s poli					le del	bería	n usa	rse p	ara a	proxi	mai	r los																								
		sigu (a)	ientes valores con un error menor que $5 \cdot 10^{-5}$.																																								
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Ejercicios adicionales

- (1) Determinar el radio de convergencia y el intervalo de convergencia de las siguientes series de potencias.
 - $\bullet \text{ (a) } \sum_{n=0}^{\infty} \frac{10^n x^n}{n^3}$
- (d) $\sum_{n=1}^{\infty} \frac{(-1)^{n-1} x^n}{n^3}$
- $(g) \sum^{\infty} n^3 (2x-3)^n$
- (b) $\sum_{n=0}^{\infty} \frac{1+5^n}{n!} x^n$ (e) $\sum_{n=0}^{\infty} \frac{(-1)^n}{n^4 2^{2n}} x^n$ (h) $\sum_{n=0}^{\infty} n! (2x-1)^n$

]={-1,2}

- $\bullet(\mathbf{c}) \sum_{n=1}^{\infty} \frac{(-1)^n x^n}{n+1}$
- (f) $\sum_{n=1}^{\infty} \frac{(4x-1)^n}{n^n}$

a)
$$\geq 10^{9} \times 10^{9} = 10^{10} \times 10^{10} = 1$$

$$\Rightarrow R = -\frac{1}{10} < x < \frac{1}{10}$$

$$\frac{5}{5} = \frac{1+5^{\circ}}{5} \times \frac{1}{5} = \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} = \frac{1}{5} \times \frac{1}{5}$$

$$|X| \quad (m) \quad |X| + (-(n+1)) \quad |Z| = 0 \quad |R| = \infty$$

$$|X| \quad (m) \quad |S| + 1 \quad |Z| = 0$$

$$|X| \quad (m) \quad |R| = \infty$$

