(a) for these convergence,
$$\sum_{n=1}^{\infty} \left| \frac{(-1)^n}{2^n} \right| = \sum_{n=1}^{\infty} \frac{1}{2^n} \text{ must converge.}$$

(a) for these convergence, $\sum_{n=1}^{\infty} \left| \frac{(-1)^n}{2^n} \right| = \sum_{n=1}^{\infty} \frac{1}{2^n} \text{ must converge.}$
 $\sum_{n=1}^{\infty} \frac{1}{2^n} = \sum_{n=1}^{\infty} \left(\frac{1}{2} \right)^n \text{ which is a convergent aumetriz series with } |r| = \frac{1}{2} < 1$
So $\sum_{n=1}^{\infty} \frac{(-1)^n}{2^n} \text{ converges absolutely (with ar without the help of the alternator)}$
(b) $S_c = -\frac{1}{2^r} + \frac{1}{2^2} - \frac{1}{2^3} + \frac{1}{2^4} - \frac{1}{2^5} + \frac{1}{2^{10}} = -0.328125 = -\frac{21}{64}$
(c) for error to be less than 0.001, the magnitude of the lot st unused
term is the partial sum must be <0.001
trial $\sum_{n=1}^{\infty} \frac{1}{2^n} = 0.0039 \neq 0.001$
 $\sum_{n=1}^{\infty} \frac{1}{2^n} = 0.00195 \neq 0.001$, $\frac{1}{2^{10}} = 0.00097 < 0.001$
So $\sum_{n=1}^{\infty} a_n epiroximates S to within 0.001, so 9 terms are needed.$

(23) ∑ (-1)ⁿ(n-1) (b)∑ (-1)ⁿ (-1)ⁿ⁼⁰
 (a) n=1
 (a) n=1
 (b)∑ (-1)ⁿ (-1)ⁿ⁼⁰
 (b)∑ (-1)ⁿ (-1)ⁿ⁼⁰
 (c) ∑ (-1)ⁿ⁼⁰

(1) 差(-モ) $= \frac{1}{2} (-1)^{n} (\overline{E})^{n}$ * $\tilde{\Xi}$ (Ξ)ⁿ converges by the Geom Series Test, 知道(-1)~(王)~ Converges absolutely

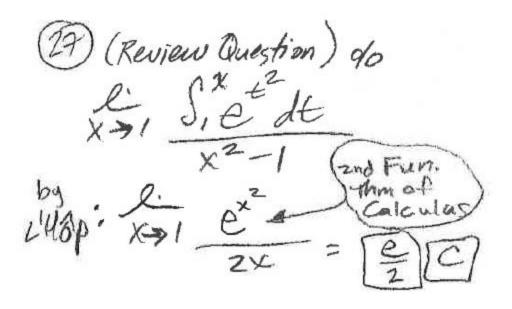
(c) Z (-D) ($\frac{\sqrt{n}}{n+3}$) * <u>converges</u> <u>conditionally</u> <u>by</u> Alt. Series Test * <u>Se</u> <u>n^{Y2}</u> <u>diverges</u> by <u>N=1</u> n+3 <u>diverges</u> by Camparison with 2 1, a divergent p-series.

14) S= = 12 (convergent p-series) = 4 2 12 R= |a3| = #= = # SE[5-等,5+制 SE[4], 427 So 141 < S < 42 A

25) which converge? I. 2 M > diverges by at term test I. 2 M+2 > diverges by at term test A=1 M+2 Since limet = 170 A=1 + 2 - 170 DEL, $\stackrel{\infty}{=} \xrightarrow{cos(n=t)} \rightarrow conditionally convergent$ harmonic series by Alt. SeriesTst. $TIL. <math>\stackrel{\infty}{=} \xrightarrow{t_n} \rightarrow divergent harmonic series$ So only I converges [B]

4

To le Jot Ard K is finite so Jot XPdx converges, So p>1. Which Must be true ?. V(A) Z - me converges -> True by Integratest. So answer is A (B) 2 , IF diverges -> False; see (A) (c) Ž - Converges → Not always true, False if n≤3 (D) = net converges - Not always true. False if n < 2 (E) Z , THI Diverges, false, by comparison, if Z n Converges, Z, not must fool,



(23) For what K, K>1 will both $\sum_{h=1}^{\infty} \frac{(-1)^{kn}}{k}$ and $\sum_{n=1}^{\infty} \frac{(\frac{k}{4})^n}{n}$ converge? $\frac{1}{n} \sum_{n=1}^{\infty} \frac{(-1)^{kn}}{n}$ will only converge (conditionally) $\begin{cases} x \sum_{h=1}^{\infty} \frac{(\frac{k}{4})^n}{n} & \text{will only converge} \\ by geometriz series test \\ if (-1)^{kn} & alternates, so k \\ if \frac{k}{4} < 1, k < 4, (but > 1) \\ \hline k = 3, 5, 7, 9, 11, -1 \end{cases}$ K = 3, 5, 7, 9, 11, -1The only value that sotisfies both scenarios is K = 3 [D]