(11) $3 + 2 + 4/3 + 8/9$

$$\frac{\frac{4}{3}}{\frac{2}{1}} = \frac{4}{3} \cdot \frac{1}{2} = \frac{2}{3}$$

$|r| = 2/3 < 1$ CONVERGES

$\frac{2}{3}$

$$\frac{a}{1-r} = \frac{3}{1-\frac{2}{3}} = \frac{3}{\frac{1}{3}} = \boxed{9}$$

17)

$$\sum_{n=1}^{\infty} \frac{(-3)^{n-1}}{4^n} = \sum_{n=1}^{\infty} \frac{(-3)^{n-1}}{4 \cdot 4^{n-1}}$$

$$= \sum_{n=1}^{\infty} \frac{1}{4}\left(\frac{-3}{4}\right)^{n-1} = \sum ar^{n-1}$$

$a = \frac{1}{4}$ $\sum$ $1 + n - 1$.

n

$|r| = \frac{3}{4} < 1$ CONVERGES

$$S = \frac{a_1}{1-r} = \frac{\frac{1}{4}}{1+\frac{3}{4}} = \frac{\frac{1}{4}}{\frac{7}{4}} = \frac{1}{4} \cdot \frac{4}{7} = \frac{1}{7}$$

(27) n^{th} TERM TEST

$$a_1 + a_2 + a_3 + \cdots + a_n + 0 + 0 + 0 + 0 + 0$$

$$\sum_{n=1}^{\infty} \sqrt[n]{2} = \sum_{n=1}^{\infty} 2^{1/n}$$

USE n^{th} TERM TEST

$$\lim_{n\to\infty} a_n = \lim_{n\to\infty} 2^{1/n} = 2^0 = 1 \neq 0$$

DIVERGES BY n^{th} TERM TEST