

$$\textcircled{36} \sum_{k=0}^{\infty} \left(\frac{k}{k+10} \right)^k$$

$$\left[\left(\frac{k+10}{k} \right)^{-1} \right]^k$$

$$\left[\left(\frac{k+10}{k} \right)^k \right]^{-1}$$

$$\lim_{k \rightarrow \infty} \left[\left(1 + \frac{10}{k} \right)^k \right]^{-1}$$

$$\rightarrow (e^{10})^{-1}$$

$$\rightarrow e^{-10} = \frac{1}{e^{10}}$$

Diverges by Divergence Test

38 $\sum_{n=1}^{\infty} \left(1 + \frac{1}{n}\right)^{-n}$

$$\lim_{n \rightarrow \infty} \left[\left(1 + \frac{1}{n}\right)^n \right]^{-1}$$

$$\rightarrow e^{-1} = \frac{1}{e}$$

Diverges by
 Divergence
 Test

$$\sqrt[n]{\left(1 + \frac{1}{n}\right)^{-n}} \rightarrow \left(1 + \frac{1}{n}\right)^{-1}$$

$$\rightarrow \frac{1}{1 + \frac{1}{n}}$$

$$\textcircled{13} \sum (-1)^n \frac{n!}{4^n} \qquad \frac{10!}{4^{10}} \qquad \frac{50!}{4^{50}}$$

Ratio Test $\frac{(n+1)!}{4^{n+1}}$

$$\frac{\frac{(n+1)!}{4^{n+1}}}{\frac{n!}{4^n}} = \frac{4^n (n+1)!}{4^{n+1} n!}$$

$$= \frac{(n+1)}{4} \longrightarrow \infty \text{ diverges}$$

$$1 + \sum (\text{seq}(n(x-2)^n, n, 1, 25))$$

592: 39, 43, 45, 48, 49