

Full Name: _____ ID: _____

1- Discuss the convergence-divergence of

$$a) \sum_{n=2}^{\infty} \frac{1}{n (\ln n)^2}$$

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

3- Evaluate

$$\sum_{n=1}^{\infty} \frac{2}{3^n \cos(n\pi)}$$

4- Find the sequence of partial sum S_n

$$\sum_{n=1}^{\infty} \frac{1}{(4n+1)(4n+9)}$$

5- Discuss the convergence-divergence of following sequences:

$$a) \left\{ \sqrt{2}, \sqrt{2\sqrt{2}}, \sqrt{2\sqrt{2\sqrt{2}}}, \dots \right\}_{n=1}^{\infty} \quad b) \left\{ \frac{e^n + e^{-n}}{e^{2n} - 1} \right\}_{n=1}^{\infty} \quad c) \left\{ n - \sqrt{n+1}\sqrt{n+3} \right\}_{n=1}^{\infty}$$