

Do the series converge or diverge?

1.
$$\sum_{k=1}^{\infty} \frac{3}{k^{12}}$$

2.
$$\sum_{k=1}^{\infty} \frac{2k + 2}{5k + 17}$$

3.
$$\sum_{k=1}^{\infty} \frac{\sin(k) + 3}{5k^{17}}$$

4.
$$\sum_{k=1}^{\infty} ke^{-k}$$