

Determine whether each series converges or diverges.

If a series converges, how close does S_{30} approximate the value of the series?

1.
$$\sum_{k=1}^{\infty} (-1)^{k+1} \frac{3k^2}{7k^2 + k + 1}$$

3.
$$\sum_{k=5}^{\infty} \frac{1}{\sqrt[3]{k} + 1}$$

2.
$$\sum_{k=1}^{\infty} (-1)^k \frac{1}{\sqrt[3]{k}}$$

4.
$$\sum_{k=1}^{\infty} (-1)^{k+1} \frac{1}{2^k}$$