

1. Determine whether each series converges or diverges. If the series converges, find an n so that S_n approximates the value of the series accurate within 0.01

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

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

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

(d)
$$\sum_{k=1}^{\infty} \frac{k}{k^3 + 1}$$

2. For which values of x does the series $\sum_{k=0}^{\infty} \frac{x^k}{7^k}$ converge?