

Problem 1. Does the following series converge or diverge? Why?

$$\sum_{n=1}^{\infty} (-1)^n \sqrt{n}$$

Problem 2. Does the following series converge or diverge? Why?

$$\sum_{n=1}^{\infty} \frac{10^n}{3^{n^2}}$$

Problem 3. For which values (if any) of x does the following series converge?

$$\sum_{n=1}^{\infty} n^2 x^n$$