1. For each series, what does the ratio test tell us? [converge absolutely, diverge, or inconclusive]. Show your work by finding the limit.

(a) \[ \sum_{n=1}^{\infty} \frac{(-2)^n}{(n + 2)!} \]

(b) \[ \sum_{n=1}^{\infty} \frac{2^{(n^2)}}{n!} \]

2. For each series, what does the root test tell us? [converge absolutely, diverge, or inconclusive]. Show your work by finding the limit.

(a) \[ \sum_{n=1}^{\infty} \left( \frac{5n^2 + 3n}{-n^2e^2} \right)^n \]

(b) \[ \sum_{n=1}^{\infty} \frac{(-1)^n}{n^2} \]