1. Use the ratio test, root test or alternating series test to determine whether the series converges.

$$\sum_{k=1}^{\infty} \frac{k^2}{4^k}$$

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$$\sum_{k=1}^{\infty} \frac{(-1)^k k^2}{e^k}$$

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$$\sum_{k=1}^{\infty}(-1)^{k+1}ke^{-k}$$

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$$\sum_{k=1}^{\infty} \left(\frac{1}{k}\right)^k$$