1. Use any appropriate test to determine whether the series converges.

$$\sum_{k=1}^{\infty} \frac{1}{\sqrt{k}\, e^{\sqrt{k}}}$$

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$$\sum_{k=1}^{\infty} \frac{3 + \cos(5k)}{k^3}$$

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$$\sum_{k=1}^{\infty} \frac{k^5}{5^k}$$

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$$\frac{2}{3} + \frac{3}{8} + \frac{4}{15} + \frac{5}{24} + \frac{6}{35} + \frac{7}{48} + \cdots$$