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1. Given $\sum_{n=1}^{\infty} a_n = \frac{2}{3} + \frac{2}{7} + \frac{2}{11} + \frac{2}{15} + \frac{2}{19} + \frac{2}{23} + \dots$

(a) Find a_n .

(b) Does a_n converge? If so, to what?

(c) Find S_3

(d) Use the limit comparison test to determine whether the series converges. Explain your reasoning.

2. Determine if $\sum_{n=1}^{\infty} \frac{e^{1/n}}{n^2}$ converges using

(a) Integral Test

(b) Direct Comparison Test