

NAME:

STUDENT NO:

Q-2) Check the following series for converge:

(i)
$$\sum_{n=2}^{\infty} \frac{3n + 7}{(8n^2 + 11n + 2007)(\ln n)^2}$$

(ii)
$$\sum_{n=1}^{\infty} \frac{1 \cdot 3 \cdot 5 \cdots (2n + 1)}{e^n n!}.$$

Solution:

(i): Limit compare with $\sum \frac{1}{n(\ln n)^2}$ which converges by the integral test, to conclude that the given series converges.

(ii): Use ratio test, $\frac{a_{n+1}}{a_n} = \frac{2n + 3}{e(n + 1)} \rightarrow \frac{2}{e} < 1$ as $n \rightarrow \infty$, to conclude that the series converges.