5. [9 points] Determine whether each of the following series converges or diverges. Fully justify your answer, including carefully showing all work for any computations. Include any convergence tests used.

a. [4 points] \[ \sum_{n=1}^{\infty} \frac{3 - \sin(n^4)}{n^2} \]

Circle one: Converges Diverges

Justification:

b. [5 points] \[ \sum_{n=2}^{\infty} \frac{1}{n \sqrt{\ln n}} \]

Circle one: Converges Diverges

Justification: