

PRINT Your Name: _____

Quiz 11 — November 6, 2009 – 9:05 section

Remove everything from your desk except this page and a pencil or pen.

Circle your answer. **Show your work.**

The quiz is worth 5 points.

Does the series $\sum_{k=3}^{\infty} \frac{\ln k}{k}$ converge? **Justify your answer very thoroughly.**

Answer: We saw in class that the Harmonic Series $\sum_{k=3}^{\infty} \frac{1}{k}$ diverges to $+\infty$. It is clear that $1 \leq \ln k$, for $3 \leq k$; hence $\frac{1}{k} \leq \frac{\ln k}{k}$ and therefore

$$\sum_{k=3}^{\infty} \frac{\ln k}{k} \text{ diverges to } +\infty \text{ more rapidly than } \sum_{k=3}^{\infty} \frac{1}{k}$$