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 $1 \le \ln k$, for $3 \le k$; hence $\frac{1}{k} \le \frac{\ln k}{k}$ and therefore

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