

1992 - BC 6

6. Consider the series  $\sum_{n=2}^{\infty} \frac{1}{n^p \ln(n)}$ , where  $p \geq 0$ .

(a) Show that the series converges for  $p > 1$ .

(b) Determine whether the series converges or diverges for  $p = 1$ . Show your analysis.

(c) Show that the series diverges for  $0 \leq p < 1$ .

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