MTH 253
Mini Test 3

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1. Consider the sequence $\{a_n\} = \left\{-250, 100, -40, 16, \frac{-32}{5}, \ldots\right\}$.

(3) (a) Determine whether the sequence $\{a_n\}$ converges or diverges. If it converges, find $\lim_{n\to\infty} a_n$. Justify your conclusion as specifically as possible.

(1) (b) True or False: This sequence is monotonic.

(1) (c) True or False: This sequence is bounded.

(10) 2. Consider the series $\sum a_n = -250+100-40+16-\frac{32}{5}+\cdots$. Determine whether the series $\sum a_n$ converges or diverges. If the series converges, find the sum of the series. Justify your conclusion as specifically as possible. Be sure to state what conditions are met that allow you to come to the conclusion that you come to.

(10) 3. Determine whether the series $\displaystyle\sum_{n=3}^{\infty} \frac{1}{n(\ln(n))^3}$ converges or diverges. Justify your conclusion as specifically as possible. Be sure to state what conditions are met that allow you to come to the conclusion that you come to. *There is no need to find the sum if it converges.*