

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Decompose the fraction $\frac{2}{x^2 + 2x}$ into partial fractions.

2. Use the method of telescoping series to compute the sum of the series $\sum_{n=1}^{\infty} \frac{2}{n^2 + 2n}$.

3. Decide whether the series $\sum_{n=2}^{\infty} \frac{n}{\log n}$ converges and, if so, compute its sum.

4. Decide whether the series $\sum_{n=2}^{\infty} \frac{2^n}{3^{n-1}}$ converges and, if so, compute its sum.

Table of Methods we Know:

- (1) Definition.
- (2) Telescoping Series
- (3) Linearity of Series
- (4) Geometric Series
- (5) Divergence Test