

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. Compute the following integrals

(a)  $\int x \ln x dx.$

(b)  $\int \frac{\ln x}{x} dx.$

2. Compute the surface area of revolution created by revolving  $f(x) = \frac{1}{4}x^2 - \frac{1}{2}\ln x$ ,  $1 \leq x \leq e$ , around the  $x$ -axis.