

Name: _____

_____ / 25

30 minutes maximum. No aids (book, calculator, etc.) are permitted. Show all work and use proper notation for full credit. Answers should be in reasonably-simplified form. 25 points possible.

1. [4 points] Compute and simplify the definite integral:

$$\int_{-1}^0 x e^x dx =$$

2. [4 points] Compute and simplify the indefinite integral:

$$\int \cos^3 \theta \sin^3 \theta d\theta =$$

3. [5 points] Sketch the region between $y = \sin(3x)$ and the x -axis on $\pi/6 \leq x \leq \pi/3$. Then compute (and simplify) the volume of the solid formed by rotating this region around the x -axis.

4. [4 points] Compute and simplify the indefinite integral:

$$\int x^2 \ln x dx =$$

5. [4 points] Compute and simplify the indefinite integral:

$$\int \sec t \, dt =$$

6. [4 points] Compute and simplify the indefinite integral:

$$\int \tan^3 x \, dx =$$

Extra Credit. [2 points] Compute and simplify the indefinite integral:

$$\int \sec^3 x dx =$$

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