

MIDTERM EXAM 2 (PRACTICE)

This is the second (practice) midterm exam for Math 16B, Winter 2009. Please write your name clearly at the top of the exam. The exam has 100 points, and you have 50 minutes to complete this exam. You may not use any notes or books, nor any calculating or computing devices. Please give *as much justification as you can* for all of your solutions.

1. Consider the region bounded by the graphs of $y = \frac{4}{x}$ and $y = 5 - x$.
 - (a) (14 points) Find the area of the region.
 - (b) (14 points) Find the volume of the solid formed by revolving the region about the x -axis.
2. (12 points) Evaluate $\int x^3 e^{x^2} dx$.
3. (12 points) Evaluate $\int_1^{e^{\pi/2}} \frac{1}{x} \sin(\ln x) dx$.
4. (12 points) Evaluate $\int_0^1 \ln(1 + 2x) dx$.
5. (12 points) Evaluate $\int \frac{x}{(x-1)^3} dx$.
6. (12 points) Evaluate $\int \frac{x^3 + 3x^2 - x - 4}{x^2 + 2x - 3} dx$.
7. (12 points) Evaluate $\int_0^\pi e^{-2x} \cos x dx$.