PRACTICE EXAM 4 - MATH 112

DATE: Friday, April 9
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 3 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Use integration by substitution to evaluate the integrals:
   (a) $\int \frac{2x^2-6}{x^3-9x+7}dx$
   (b) $\int (10x-35)e^{x^2-7x}dx$
2. Use integration by parts to evaluate the following integrals:
   (a) $\int x^{2004} \ln x dx$
   (b) $\int 3xe^{2x}dx$
3. Compute the definite integrals:
   (a) $\int_{-1}^{3}(x^2-2x+3)dx$
   (b) $\int_1^e \ln x \ dx$
   (c) $\int_{-1}^{1} x^2e^x dx$
4. Make a sketch and find the area of the region trapped by the graphs of $f(x) = x^3$ and $g(x) = x$.
5. Make a sketch and find the volume of the solid created by revolving the graph of $f(x) = \sqrt{2-x}, 0 \leq x \leq 2$, around the x-axis.
6. Make a sketch and find the volume of the solid created by revolving the graphs of $f(x) = e^x$ and $g(x) = -x^2+4$ between $x = 0$ and $x = 1$ around the x-axis.