EXAM 4 - MATH 112
DATE: Friday, April 8
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. An object is projected upward from the ground with an initial velocity of 80 feet per second. Find the function $h(t)$ giving the height of the object at time t. Then find how long it will take the object to rise to its maximum height and the maximum height. Recall that the acceleration of gravity is equal to -32 feet per second squared.

2. Evaluate the definite integrals

   (a) $\int_3^6 \frac{x}{3\sqrt{x^2-8}}dx$

   (b) $\int_1^3 \frac{3+\ln x}{x}dx$

3. Sketch the region bounded by the graphs of the equations $y = 4 - x, y = x^2 - 5x + 8, x = 0$ and then find the area of the region.

4. Use the washer method to find the volume of the solid formed by revolving the region trapped between the graphs of $y = x^2$ and $y = x^3$ around the x-axis.

5. Compute the following integrals

   (a) $\int xe^{2005x}dx$

   (b) $\int x^{2006}\ln x\, dx$

6. Compute the indefinite integral $\int \frac{3}{x^2+x-2}dx$