EXAM 4 - MATH 112 Friday, November 30

YOUR NAME:_____ George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Find the following integrals:

   (a) $\int \frac{(3x-1)(2x-7)}{x} dx =$

   (b) $\int \frac{1}{x}(2019 - 2019xe^{2019x})dx =$

2. Find the area enclosed by the graphs of the functions $f(x) = x^3 + 2x$ and $g(x) = 3x^2$.

3. Your uncle invested in 2010 in a real estate deal originally worth \$20,000 and growing at the rate of $400e^{0.05t}$ dollars per year, where t is the number of years since the investment was made.

   (a) Find a formula for the value of the investment t years after 2010 (please, simplify to prepare to answer Part (b) more comfortably).

   (b) When will the investment be worth \$52,000?

4. Find the average value of the function $f(x) = 6x^2 - 4e^{2x}$ from $x = 0$ to $x = 2$.

5. Evaluate the following integrals

(a) $\int \sqrt[5]{3x^2 - 6x}(x - 1)dx$

(b) $\int_1^3 \frac{e^{1/x}}{x^2} dx$