EXAM 4 - MATH 112   Friday, April 17

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. Compute each indefinite integral (Do not omit any details):

   (a) $\int 24e^{-2x/3}dx =$

   (b) $\int \frac{(x+2)(x-4)}{x^2}dx =$

2. The cost of maintaining a home generally increases as the home becomes older. Suppose that the rate at which the cost increases in dollars per year is $200e^{0.4t}$, where t is the age of the home is years. Find a formula for the total maintenance cost for the first x years.

3. Your significant other has an artistic temperament and would like to paint on the wall of your living room the shape shown below. How much area in square meters will (s)he need to paint?
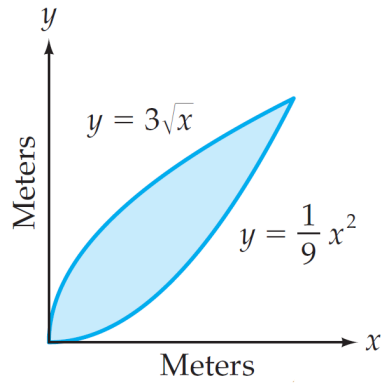
4. Find the total area enclosed by the graphs of the functions $f(x) = x^3 + x^2$ and $g(x) = x^2 + x$.

5. Use substitution (definite or indefinite as appropriate) to compute the following integrals:

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

(b) $\displaystyle \int_0^1 x^3 e^{x^4} dx =$