EXAM 4 - MATH 112 Friday, April 18

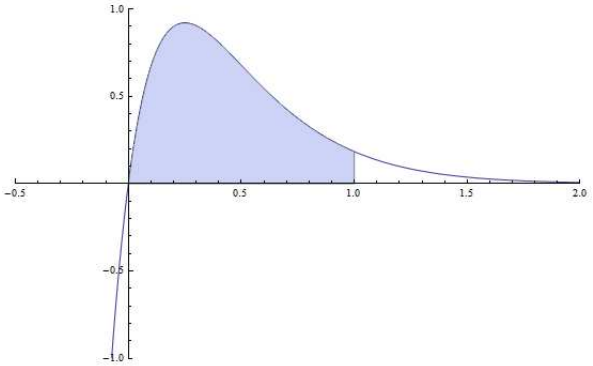
YOUR NAME:_____ George Voutsadakis

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. Use substitution to find the indefinite integrals:

   (a) $\int x^2 e^{x^3} dx$ (b) $\int \sqrt{\ln x} \frac{1}{x} dx$

2. Use the by-parts method to evaluate the definite integral $\int_0^1 10xe^{-4x} dx$



3. Evaluate the improper integral $\int_5^\infty \frac{1}{(x-4)^5} dx$

4. Solve the differential equation $y^4 y' = 3x^2$ subject to $y(0) = 1$.

5. Solve the differential equation $y' = xy - 5x$, with $y < 5$, subject to $y(0) = 4$.