Name: _____

Math 152 * Enrichment Session 1

1. [28 points] Evaluate. Show all reasoning.

   (a) $\int_0^2 x^2 e^{x^3}\, dx$

   (b) $\int_0^2 |2x-1|\, dx$

   (c) $\int_e^{e^3} \frac{dx}{x\sqrt{\ln x}}$

   (d) $\int \frac{x}{1-x^2}\, dx$

*Supported by NSF grant number 1317651

(e) $\displaystyle\int_0^{3\pi/2} |\sin x|\, dx$

(f) $\displaystyle\int_1^e (\ln x)^2\, dx$

(g) $\displaystyle\int \sec^3 x \tan x\, dx$

2. [9 points] Sketch the region R in the xy-plane bounded by the curves

(a) $x = 1 - y^2$ and $x = y^4 - 1$

(b) $y = \sqrt{x}$ and $y = x^{1/3}$ (first quadrant).

(c) $x = y^2$ and $x = 4 - y^2$.

3. [5 points] Find the area of the region below the $x - axis$ bounded by $y = x^4 - 16$.