Math 262   Calculus II   Lab 10 Integration by Parts   Name: _____

1. Evaluate each of the following integrals:.

   (a) $\int xe^{4x} \; dx$

   (b) $\int e^{3x}\cos(8x) \; dx$

   (c) $\int x\sec^2 x \; dx$

   (d) $\int x\sec(x^2) \; dx$

(e) $\displaystyle\int x5^x \ dx$

(f) $\displaystyle\int e^{\sqrt{x}} \ dx$

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

(h) $\displaystyle\int \sin(\ln x) \ dx$

(i) $\displaystyle\int x^3(x^2+5)^{49}\ dx$

(j) $\displaystyle\int x^2(x^3+5)^{49}\ dx$

2. Derive the following reduction formula:

$\int \cos^n x\ dx = \frac{1}{n}\cos^{n-1} x \sin x + \frac{n-1}{n}\int \cos^{n-2} x\ dx$

3. Find the volume of the solid generated by revolving the region in the first quadrant bounded by the coordinate axes, the curve $y = e^{-x}$, and the line $x = 1$ about the line $x = 1$