HW 3 Due : Friday, Sep. 13

1 (6.2 Problem 10) Find $\frac{dy}{dx}$ where $y = \int_1^x ue^{-u^2} du$

2 Compute the following indefinite integrals

(a)

$$(6.2 \text{ Problem } 46) \int \frac{x^3 + 3x}{2\sqrt{x}} dx$$

(b)

$$(\text{ 6.2 Problem } 52) \int 3x^{\frac{1}{3}} + \frac{1}{3x^{\frac{1}{3}}} dx$$

(c)

$$(\text{ 6.2 Problem } 94) \int x^3 + 3^{-x} dx$$

(d)

$$\int 2\sec^2(\frac{x}{3}) - \frac{\sin(\frac{x}{3})}{3} + \frac{1}{2x+1} dx$$

3 Compute the following definite integrals

(a)

$$(6.2 \text{ Problem } 102) \int_4^9 \frac{1+\sqrt{x}}{\sqrt{x}} dx$$

(b)

$$(\text{ 6.2 Problem } 104) \int_{-1}^2 (2+3t)^2 dt$$

(c)

$$(\text{ 6.2 Problem } 106) \int_{-\frac{\pi}{3}}^{\frac{\pi}{3}} 2\cos(\frac{x}{2}) dx$$

(d)

$$(\text{ 6.2 Problem } 120) \int_2^3 \frac{1}{z+1} dz$$

4 (6.3 Problem 8) Find the areas of the region bounded by $y = \sin(x)$, $y = \cos(x)$, from $x = 0$ to $x = \frac{\pi}{4}$

5 Find the areas of the region enclosed by $y = x^2 - 1$ and $y = 2x + 2$.

Extra Practice Problems (These are extra problems for you to practice and you can check the answers at the back of the book)
Sec 6.2 Problem 9, 45, 51, 93, 103, 105, 121
Sec 6.3 Problem 1, 9