

## MATH 203 WORKSHEET #9

(1) Compute the following definite integrals.

(a)  $\int_7^{77} \frac{1}{t^3 + 3} dt$

(b)  $\int_0^1 6x(3x^2 + 1)^3 dx$

(c)  $\int_1^2 \frac{1}{y + 1} dy$

(d)  $\int_0^4 x^2 e^{x^3 - 1} dx$

(2) Compute the following indefinite integrals.

(a)  $\int y^3(2y + \frac{1}{y}) dy$

(b)  $\int \frac{2t}{t^2 - 4} dt$

(c)  $\int 2xe^{x^2} dx$

(d)  $\int (2x + 1)^6 dx$

(e)  $\int x \sin x^2 dx$

(3) Estimate  $\sum_{k=1}^{400} \frac{1}{k} = 1 + \frac{1}{2} + \frac{1}{3} + \cdots + \frac{1}{400}$ .

(4) Estimate  $\int_0^1 e^{-x^2} dx$ .

(5) Find the indefinite integrals.

(a)  $\int (x^2 + 1)5^{x^3+3x+1} dx$

(b)  $\int e^{\cos t+6} \sin t dt$

(c)  $\int \frac{e^t}{e^{2t} + 1} dt$

(d)  $\int \frac{1}{t^2 + 2t + 10} dt$

(6) Find the definite integrals.

(a)  $\int_{-1}^1 \frac{x}{x^2 + 1} dx$

(b)  $\int_1^3 \frac{2}{x^3} dx =$