

Math 181
Fall, 2008

Name _____

Exam 2
Part 1
No Calculator! No Notes!

Evaluate each integral.

1. $\int \frac{dx}{1 - \cos x}$

2. $\int x \sin^2 x dx$

$$3. \int \frac{x^2 + 2x - 1}{2x^3 + 3x^2 - 2x} dx$$

4. $\int \frac{\sqrt{9-x^2}}{x^2} dx$

5. $\int \frac{2x^2 - x + 4}{x(x^2 + 4)} dx$

6. $\int \frac{x^2 - 4x - 10}{x^2 - x - 6} dx$

Exam 2
Part 2
Calculator Ok! No Notes!
No work = No credit!

1. Solve the following differential equations.

a) $x^2 y' + 2xy = \cos^2 x$

b) $\frac{dy}{dx} = \frac{xe^x}{y\sqrt{1+y^2}}$

2. Evaluate $\int_2^5 \frac{dx}{\sqrt{x-2}}$

3. Use Simpson's Rule with $n = 6$ to approximate $\int_0^1 e^{x^2} dx$

4. A tank contains 20 kg of salt dissolved in 5000 L of water. Brine that contains 0.03 kg of salt per liter of water enters the tank at a rate of 25 L per minute. The solution is kept thoroughly mixed and drains from the tank at the same rate. How much salt remains in the tank after 30 minutes?

5. Evaluate $\int_1^{\infty} \frac{1}{x^3} dx$.