Math 21B

Midterm I

Please do not turn this page until told to do so. No notes, books, or calculators may be used for this exam. You must show ALL work to receive full credit on a problem.

Name: _____

SID: _____

Problem(s)	Score
1	/ 15
2	/ 20
3	/ 20
4	/ 20
5	/ 25
Total	/ 100

(15 pts) **1.** Solve the initial value problem

$$\frac{dy}{dx} = e^{-x}, \quad y(0) = 3.$$

(20 pts) **2.** Evaluate the integral

$$\int_{-\pi/2}^{\pi/2} (\sin x)^7 \cos x \, dx.$$

(20 pts) **3.** Evaluate the integral

$$\int_3^9 \frac{dx}{x \ln x}.$$

(20 pts) **4.** Find the area of the region below the curve $y = \cos x$, above the line $y = -1$ and between the lines $x = -\pi/2$ and $x = \pi/2$.

(25 pts) **5.** Find the area of the region enclosed by the curve $y = x\sqrt{1-x^2}$ and the x-axis.