latest 6.3in8.5in-1cm0.7cm

document = =2.5cm=usual =0 September 24, 1997 **Math 108, Section 1, Test 1**

minipage[c]6in 1. Please cross $\times$ the correct answers.

[-2mm]0mm8mm Sign your name:6cm 6cm6=2.5in =0.8cm =1cm =0.4cm=1

Compute the improper integral

$$\int_1^\infty x^{-7} dx.$$

16 17 18 -18 -16

Determine the average value of the function $y = \sin x$ between $x = 0$ and $x = \pi$.

2 2π 0 $-\pi 2$ 2π

Consider the following data for a function $y = y(x)$:

14 173 203 3 -203

Compute the definite integral $\int_0^1 x^2 e^x \, dx =$

$e - 2$ $-e - 2$ e $-e$ $e - 1$

Let $f(x), 2 \leq x \leq 6.5$, be a continuous function whose known values are given by the table:

x	2	2.5	3	3.5	4	4.5	5	5.5	6
$f(x)$	4	4	5	6	7	6	5	4	4

.

Estimate $\int_2^{6.5} f(x) dx$.

20 18.5 5 45 22.5

Assume a certain amount of money is in a bank account with an annual interest rate of 5% compounded continuously. Compute the number of years it takes until the amount did double.

$20 \ln 2$ 25 17 20 $5 \ln 2$

Compute the definite integral $\int_1^e \ln x x \, dx =$

12 $2e$ e $e - 1$ $1 - e2$

The area of the region bounded by the graphs of $f(x) = e^x$ and $g(x) = e^{-x}$ for $0 \leq x \leq 1$ is

$e + e^{-1}$ $e - e^{-1}$ $e - e^{-1} - 1$ $e + e^{-1} - 1$ $e + e^{-1} - 2$

*4cm

(15 pts) The marginal profit for a certain company is $MP_1(x) = -x^2 + 18x - 24$. The company expects the daily production level to rise from $x = 10$ to $x = 15$ units. The management is considering a plan that would have the effect of changing the marginal profit to $MP_2(x) = -x^2 + 24x - 12$. Should the company adopt the plan. What is the difference in profit between the two proposed plans.

*17cm

(15 pts) Find the present value PV of a perpetual income stream flowing continuously at a rate of \$3000 per year, and with interest rate compounded continuously at the rate of 6%.

*17cm

(14 pts) The demand curve of a certain item is $p = D(q) = -116q^2 + 10$ and its supply curve is

A) Find the equilibrium price p_e and equilibrium quantity q_e.8cm

B) Compute the producer surplus.