MIDTERM III

MATH 132 WINTER 2000

I. Evaluate the following integrals

a) $\int x(7x^2+2)^4\,dx$ (10p)

b) $\int \frac{x^2+6x+3}{x}\,dx$ (10p)

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c) $\int_0^6 100 + 6x^2\,dx$ (10p)

d) $\int \frac{e^x}{e^x + 5}\,dx$ (10p)

(at this point have the integral tables - in Appendix C of your book - ready)

e) use provided integral tables to find the following integral. State the number of formulas that you use

$$\int \frac{x\,dx}{\sqrt{5+6x}} \qquad 15\text{p}$$

II. Find the area of the region bounded by: the graph of the curve $y = x^2 - 2x$, the lines $x = -2$, $x = 1$ and the x-axis (15p)

III. Suppose the demand equation for a product is given by

$$p = 400 - 2q$$

and its supply function is given by

$$p = q + 100$$

(a) find the equilibrium point

(b) find the consumer's surplus
(c) find the producer's surplus (15p)

IV. Find the area under the graph of the curve $y = 9 - x^2$ and above the line $y = 5 - 3x$. (15p)