

Math 192 Sec S07N01 Test 2 – Mar 9 2007

name (printed)

student number

**I have read and understood
the instructions below:**

signature

Instructions:

1. No notes or books are to be used in this test. If you need scrap paper please ask and some will be provided.
2. A non-programmable, non-graphing calculator is permitted.
3. There are 6 pages (including this cover page) in the test. Justify every answer, and clearly show your work. Unsupported answers will receive no credit.
4. You will be given 50 minutes to write this test. Read over the test before you begin.
5. At the end of the test you will be given the instruction "Put away all writing implements and remain seated." *Continuing to write after this instruction will be considered as cheating.*
6. **Academic dishonesty:** Exposing your paper to another student, copying material from another student, or representing your work as that of another student constitutes academic dishonesty. Cases of academic dishonesty may lead to a zero grade in the test, a zero grade in the course, and other measures, such as suspension from this university.

Question	value	score
1	10	
2	10	
3	10	
4	10	
5	10	
Total	50	

Question 1: Compute the following integrals:

(a)[5 points]

$$\int e^{2x} - (2x)^e dx$$

(b)[5 points]

$$\int \frac{(t^3 - t)^2}{t^2} dt$$

Question 2: Compute the following integrals:

(a)[5 points]

$$\int_1^4 \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$$

(b)[5 points]

$$\int_0^1 \frac{7t}{5t^2 + 6} dt$$

Question 3 [10 points]

Recall that if $c = f(q)$ represents total cost as a function of quantity produced, then the average cost of producing q items is $\bar{c} = \frac{f(q)}{q}$. Suppose the marginal cost function for a manufacturer's product is given by

$$\frac{dc}{dq} = 10 - \frac{100}{q+10} .$$

When 100 units are produced, the average cost is 50 dollars per unit. Determine the manufacturer's fixed cost (round your answer to the nearest dollar).

Question 4 [10 points]

Marginal revenue data for a particular product is given by the following table:

q	0	10	20	30	40	50	60	70	80
$\frac{dr}{dq}$	10	9	8.5	8	8.5	7.5	7	6.5	7

Here q is measured in units while dr/dq is in dollars per unit. Use the trapezoid rule to estimate the change in revenue as production is increased from 20 to 60 units.

Question 5 [10 points]

A product has demand equation

$$(p + 10)(q + 20) = 1000 ,$$

supply equation

$$q - 4p + 10 = 0 ,$$

and equilibrium $(q_0, p_0) = (30, 10)$. Which is larger: consumer surplus or producer surplus?