Show all work. Circle your answer.

No books, no notes, no calculator, no cell phones, no pagers, no electronic devices at all.

Solutions will be posted shortly after the exam: www.math.wisc.edu/~miller/m213

Name———————————————————

Circle your DIScussion section (column one):

TA: Youngsuk Lee

DIS 301	8:50 T	6322 SOC SCI
DIS 302	8:50 R	215 INGRAHAM
DIS 303	9:55 T	225 INGRAHAM
DIS 304	9:55 R	495 VAN HISE

Problem	Points	Score
1	10	
2	8	
3	8	
4	8	
5	8	
6	8	
Total	50	

1. (10 pts) Suppose the supply function for some commody in dollars is given by

$$S(q) = 1 + 2q$$

and the demand function is given

$$D(q) = 16 - q^2$$

   (a) Graph the supply and demand curves.
   (b) Find the point at which supply and demand are in equilibrium.
   (c) Find the consumer's surplus, CS.
   (d) Find the producer or supplier surplus, SS.
   (e) Shade and label the appropriate areas for these in your graph.

2. (8 pts)

(a) Approximate the definite integral $\int_0^2 e^{x^2}\, dx$ with $n = 3$ subintervals and using the midpoint of each subinterval for x_k.

(b) Use the Trapezoid rule to approximate the same integral with the same subintervals.

Circle your answer.

3. (8 pts) Find

$$\int \ln(x+1)\, dx$$

Circle your answer.

4. (8 pts) Find

$$\int \frac{e^{\sqrt{z}}}{\sqrt{z}} \, dz$$

Circle your answer.

5. (8 pts) Find

$$\int e^x (x + 1) \, dx$$

Circle your answer.

6. (8 pts) Evaluate the integral

$$\int_0^1 \frac{dx}{2x+1}$$

Circle your answer.

Answers

1. equilibrium at $q = 3$, $p = 7$, $CS = 18$, $SS = 9$

2.
(a) $\frac{2}{3}(e^{\frac{1}{9}} + e + e^{\frac{25}{9}})$
(b) $\frac{2}{3}(\frac{1+e^4}{2} + e^{\frac{4}{9}} + e^{\frac{16}{9}})$

3. $(x + 1)\ln(x + 1) - x + C$

4. $2e^{\sqrt{z}} + C$

5. $xe^x + C$

6. $\frac{1}{2}\ln 3$