Name: _____

VIP ID: _____

- Write your name and VIP ID in the space provided above.
- The test has three (3) pages, including this one.
- Credit for each problem is given in parentheses at the right of the problem number.
- No books, notes or scratch paper may be used on this test.
- An approved calculator may be used on this test.

Problem 1 (10 + 15 pts)**.** Evaluate the following integrals.

(a) $\displaystyle\int_{1.1}^{1.8} \frac{e^t \ln t}{t^2}\, dt =$

(b) $\displaystyle\int_{10}^{108} 10x^2 e^{2x^3}\, dx =$

Problem 2 (25 pts)**.** Find the average value of the function $f(x) = 1 + 101x - 2x^2$ between $x = 0$ and $x = 4$.

Problem 3 (25 pts)**.** For a product, the demand curve is $p = 100e^{-0.008q}$ and the supply curve is $p = 4\sqrt{q} + 10$ for $0 \leq q \leq 500$, where q is quantity and p is price in dollars per unit. Find the consumer surplus at the equilibrium (round your answer to the nearest dollar).

Problem 4 (25 pts)**.** The marginal cost function of producing q mountain bikes is

$$MC(q) = \frac{600}{0.3q + 5}.$$

If the fixed cost in producing the bicycles is \$2000, find the total cost to produce 30 bicycles.