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

(b) $\displaystyle\int_{1}^{108} (10x^2 - 3)e^{5x} \, dx =$

Problem 2 (25 pts)**.** Find the average value of the function $f(x) = 11 + 10x - x^2$ between $x = 0$ and $x = 3$.

Problem 3 (25 pts)**.** The demand curve for a product is given by $q = 100 - 2p$ and the supply curve is given by $q = 3p - 60$. Find the consumer surplus at the equilibrium.

Problem 4 (25 pts)**.** The marginal cost function of producing q mountain bikes is $C'(q) = \dfrac{600}{0.3q + 5}$. If the fixed cost in producing the bicycles is \$2000, find the total cost to produce 30 bicycles.