6. [10 points] The company Canco manufactures and sells aluminum cans. The table below gives information about marginal cost (MC), in dollars, for Canco at various production levels q, in cans. The marginal revenue is constant and equal to $0.05.

q	0	10000	20000	30000	40000	50000	60000
MC	$0.05	$0.04	$0.03	$0.02	$0.06	$0.08	$0.11

a. [3 points] Assuming the marginal cost is either only increasing or only decreasing between each pair of consecutive table entries, give the smallest interval with endpoints from the table which must contain the production level that maximizes the company's profit. You do not need to justify your answer.

> *Solution:* $30000 < q < 40000$

b. [2 points] Find a formula for $R(q)$, the revenue from selling q cans.

> *Solution:* $MR = R'(q) = 0.05$, so $R(q) = 0.05q + C$. $R(0) = 0$, so $C = 0$, which means $R(q) = 0.05q$.

c. [5 points] Using a right sum, approximate the cost for the company to make the first 50,000 cans. Assume the fixed costs for the company are zero. You must write all the terms in the sum to receive credit.

> *Solution:* Cost to make first 50,000 cans $\approx 10000(0.04+0.03+0.02+0.06+0.08) = \$2300$