

MTH 201 – Business Calculus: Quiz 2 (14/5/2026)

Full name: TROY ID No.:

Q1. Evaluate using integration by parts $\int (6x + 5) \ln x \, dx$.

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Q2. Given the demand equation $D(x) = 64 - 2x$, for $0 \leq x \leq 32$ and the supply equation $S(x) = \sqrt{x + 36}$. Calculate

- a) The equilibrium point.
- b) The consumer surplus at the equilibrium point.
- c) The producer surplus at the equilibrium point.

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Q3. A company determines that its marginal revenue per day is given by $R'(t) = 85e^t - 6t$, $R(0) = 0$, where $R(t)$ is the total accumulated revenue, in dollars, on the t th day. The company's marginal cost per day is given by $C'(t) = 70 - 2t$, $C(0) = 60$, where $C(t)$ is the total accumulated cost, in dollars, on the t th day.

- a)** Find the total profit from $t = 0$ to $t = 10$ (the first 10 days).
- b)** Find the average daily profit for the first 10 days (from $t = 0$ to $t = 10$).

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Q1. Evaluate using integration by parts $\int (4x - 1) \ln x \, dx$.

Q2. Given the demand equation $D(x) = 50 - 2x$, for $0 \leq x \leq 25$ and the supply equation $S(x) = \sqrt{x + 14}$. Calculate

- a) The equilibrium point.
- b) The consumer surplus at the equilibrium point.
- c) The producer surplus at the equilibrium point.

Q3. A company determines that its marginal revenue per day is given by $R'(t) = 70e^t - 4t$, $R(0) = 0$, where $R(t)$ is the total accumulated revenue, in dollars, on the t th day. The company's marginal cost per day is given by $C'(t) = 75 - 2t$, $C(0) = 50$, where $C(t)$ is the total accumulated cost, in dollars, on the t th day.

a) Find the total profit from $t = 0$ to $t = 10$ (the first 10 days).

b) Find the average daily profit for the first 10 days (from $t = 0$ to $t = 10$).
