Practice worksheet | Integration

Contextual integral models

Name: _____ Date: _____

6 questions | 18 marks

1. Find the average value of $f(x) = 3x^2$ on $[0, 2]$. [3 marks]

2. $C'(q) = 2q + 5$ dollars/item and $C(0) = 40$. Find $C(6)$. [3 marks]

3. Water flows at $12e^{-t}$ L/min for $0 \le t \le \ln 2$. Find the supplied volume. [3 marks]

4. A force $F(x) = 4x$ newtons moves an object from $x = 1$ to $x = 3$ metres. Find $\int_1^3 F(x)\,dx$ and its unit. [3 marks]

5. A rate model $r(t) = 10 - 2t$ items/hour is used for production until $t = 8$ hours. Explain a limitation. [3 marks]

6. The average value of $f(x) = kx$ on $[0, 4]$ is 6. Find k. [3 marks]