

Name: _____

Show your work. Answers without work earn reduced credit.

1. [2 parts, 1 point each] At time t , water leaks from a pool at the rate of $r(t) = 3e^{-2t}$ gallons per minute.

(a) Express the amount of water that leaks from the pool from time $t = 4$ minutes to time $t = 10$ minutes as a definite integral.

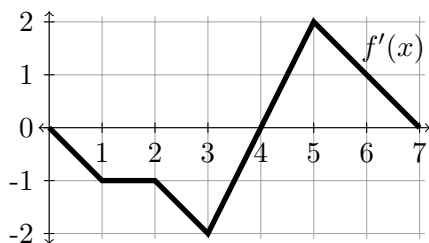
(b) Find the amount of water that leaks from the pool during this time. You may use your calculator to solve the definite integral.

2. [2 parts, 1 point each] The marginal revenue function (in dollars per unit) on sales of q units of a product is given by $R'(q) = 4000 - 3q^2$. The company sells 25 units.

(a) Express the total revenue as a definite integral.

(b) Find the total revenue. You may use your calculator to solve the definite integral.

3. [2 points] The graph of the derivative $f'(x)$ is shown below. Fill in the table of values given that $f(0) = 4$.



x	0	1	2	3	4	5	6	7
$f(x)$	4							

4. [2 points] Find an antiderivative for the following functions.

(a) $f(x) = 6$

(c) $g(x) = x^{\sqrt{2}}$

(b) $f(t) = 3t - 2$

(d) $h(y) = y^2 + \frac{1}{y}$

5. [2 points] Find the following indefinite integrals.

(a) $\int (t^4 + \sqrt{t}) dt$

(c) $\int 2e^{5s} ds$

(b) $\int \left(3x - \frac{1}{x}\right) dx$

(d) $\int \sqrt{y}(2y + 1) dy$