Example

Suppose the cost for producing Winchester Widgets is

$$C(x) = \frac{1}{2}x^2 + 5,$$

where x is in thousands of Widgets.

(a) Find the marginal cost.

(b) Using the marginal cost, find the total change of cost as production goes from 2000 units to 5000 units.

Example

Find the indicated definite integrals (simplify your answers).

(a) $\displaystyle \int_{1}^{3} \left(\frac{1}{x} - 3x^2 \right) dx$

(b) $\displaystyle \int_{1}^{4} \frac{\sqrt{x}+1}{\sqrt{x}} \, dx$

Example

Find the area bounded by the x-axis, the y-axis, and the curve $y = x^2 - 4$.