Student: Arfaz Hossain **Date:** 12/05/21	**Instructor:** UVIC Math **Course:** MATH 100 (A01, A02, A03) Fall 2021 **Assignment:** Assignment 10

The marginal cost of printing a poster when x posters have been printed is $\frac{dc}{dx} = \frac{1}{2\sqrt{x}}$ dollars. Find $c(4) - c(1)$, the cost of printing posters 2-4.

The net change in a differentiable function F(x) over an interval $a \le x \le b$ is the integral of its rate of change.

$$F(b) - F(a) = \int_a^b F'(x)dx$$

The antiderivative of $\frac{1}{2\sqrt{x}}$, omitting any arbitrary constants, is $\sqrt{x}$.

Thus, $c(x) = \sqrt{x}$.

To find c(b), the cost of printing posters 1-4, evaluate c(x) at $x = 4$.

$$\begin{aligned} c(b) &= c(4) \\ &= \sqrt{4} \\ &= 2 \text{ dollars} \end{aligned}$$

To find c(a), the cost of printing the first poster, evaluate c(x) at $x = 1$.

$$\begin{aligned} c(a) &= c(1) \\ &= \sqrt{1} \\ &= 1 \text{ dollar} \end{aligned}$$

To find $c(b) - c(a)$, the cost of printing posters 2-4, subtract c(a) from c(b).

$$\begin{aligned} c(b) - c(a) &= (2) - (1) \\ &= 1 \text{ dollar} \end{aligned}$$

Thus, the cost of printing posters 2-4 is 1 dollar.