

**Multiple Choice**

**Question:** Given the population of an island,  $p(t)$  below, where  $t$  is the number of years since 1920. Find  $p(80)$ ,  $p'(80)$  and interpret  $p'(t)$ .

$$p(t) = \frac{400t^2}{(400+t)}$$

- a)  $p(80) = 5,333.3$ ,  $p'(80) = 30,719,988$  and we expect the island's population to increase by 30,719,988 people from the year 2000 to the year 2001.
- b)  $p(80) = 5,333.3$ ,  $p'(80) = 122.2$  and in the year 2,000, the island has 5,333.3 people on inhabiting it.
- c)  $p(80) = 5,333.3$ ,  $p'(80) = 122.2$  and we expect the island's population to increase by 122.2 people from the year 2000 to the year 2001.
- d)  $p(80) = 122.2$ ,  $p'(80) = 5,333.3$  and we expect the island's population to increase by 5,333.3 people from the year 2000 to the year 2001.

**Multiple Choice**

**Question:** The cost function for a company is given below, where  $C(x)$  is in hundreds of dollars, and  $x$  is the number items produced. Find  $C(80)$ ,  $C'(80)$  and interpret  $C'(x)$ .

$$C(x) = 0.02x^2 + 120x + 20$$

- a)  $C(80) = \$9,748$ ,  $C'(80) = \$123.2$  and we expect to incur an increase cost of \$123.2 for producing the 81st item.
- b)  $C(80) = \$9,748,000$ ,  $C'(80) = \$143,200$  and we expect to incur an increase cost of \$143,200 for producing the 81st item.
- c)  $C(80) = \$9,748$ ,  $C'(80) = \$14,320$  and we expect to incur an increase cost of \$14,320 for producing the 81st item.
- d)  $C(80) = \$974,800$ ,  $C'(80) = \$12,320$  and we expect to incur an increase cost of \$12,320 for producing the 81st item.

**Multiple Choice**

**Question:** The cost function for a company is given below, where  $C(x)$  is in hundreds of dollars, and  $x$  is the number items produced. After graphing  $C'(x)$ , interpret what is happening on a domain of  $[0,80]$ .

$$C(x) = 0.02x^2 + 120x + 20$$

- a) The marginal cost exhibits a steady increase.
- b) The marginal cost exhibits a fluctuating increase.
- c) The marginal cost is constant.
- d) The cost is constant and then increases uniformly.

**Question 4****Multiple Choice**

**Question:** Estimate the cost of the next items produced, where  $C(x)$  is in dollars, and  $x$  is the number items produced, if

$$C(x) = x^2 + 20x$$

- a)  $C'(x) = 2x + 20$
- b)  $C'(x) = 22$
- c)  $C'(x) = x^2 + 20$
- d) correct answer not given

**Question 5****Multiple Choice**

**Question:** Find the elasticity of  $E$  if  $x = 20 - 4p$  and  $p = 1$  and determine if the demand is inelastic, elastic or unit elastic.

- a)  $E = 1/5$ , elastic
- b)  $E = 1/5$ , inelastic
- c)  $E = 1/4$ , elastic
- d)  $E = 1/4$ , inelastic