1. Consider the function *f* given by the following formula.

$$f(x) = \begin{cases} x^2 + 3 & \text{if } x < 1\\ 5 - x & \text{if } x \ge 1 \end{cases}$$

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At x = 1, f...

(A) is continuous.

- (B) has a jump discontinuity.
- (C) has an infinite discontinuity.
- (D) None of the above.

2. What is the rate of change of the volume of a cube with respect to its side lengths *s* when s = 5?

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- (A) 5
- (B) 25
- (C) 75
- (D) None of the above

3. True or False?

The function

$$f(x) = \begin{cases} x^2 + 1 & \text{if } x \ge 0\\ -x^2 & \text{if } x < 0 \end{cases}$$

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is right continuous at 0.

4. A rocket is fired vertically upwards from the ground. The height *s* of the rocket in feet after *t* seconds is given by

$$s(t) = -16t^2 + 160t.$$

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At what time t is the velocity equal to 0?

(A) t = 3 s
(B) t = 5 s
(C) t = 10 x
(D) None of the above

5. Suppose P(x) is the profit a company earns from producing x widgets. The graph of the marginal profit function MP(x) is shown to the right. How many widgets should the company produce in order to maximize profit?

(A)
$$x = 200$$

(B)
$$x = 500$$

(C) Neither of the above



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