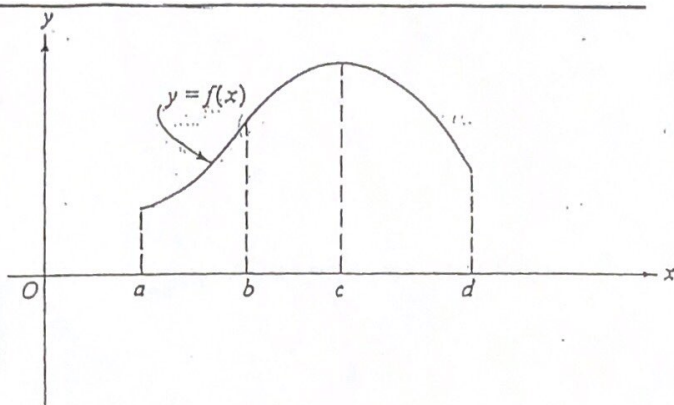


Name _____

AB Calc
Quiz #4

13



The graph of $y = f(x)$ is shown in the figure above. On which of the following intervals are $\frac{dy}{dx} > 0$ and $\frac{d^2y}{dx^2} < 0$?

- I. $a < x < b$
- II. $b < x < c$
- III. $c < x < d$

- (A) I only (B) II only (C) III only (D) I and II (E) II and III

If $f(x) = \sqrt{2x}$, then $f'(2) =$

- (A) $\frac{1}{4}$ (B) $\frac{1}{2}$ (C) $\frac{\sqrt{2}}{2}$ (D) 1 (E) $\sqrt{2}$

$$f(x) = \begin{cases} x + 2 & \text{if } x \leq 3 \\ 4x - 7 & \text{if } x > 3 \end{cases}$$

Let f be the function given above. Which of the following statements are true about f ?

- I. $\lim_{x \rightarrow 3} f(x)$ exists.
- II. f is continuous at $x = 3$.
- III. f is differentiable at $x = 3$.

- (A) None (D) I and II only
(B) I only (E) I, II, and III
(C) II only

An equation of the line tangent to the graph of $f(x) = x(1 - 2x)^3$ at the point $(1, -1)$ is

- (A) $y = -7x + 6$ (B) $y = -6x + 5$ (C) $y = -2x + 1$
(D) $y = 2x - 3$ (E) $y = 7x - 8$

A particle moves along the x -axis so that at any time $t \geq 0$ its position is given by $x(t) = t^3 - 3t^2 - 9t + 1$. For what values of t is the particle at rest?

- (A) No values (B) 1 only (C) 3 only (D) 5 only (E) 1 and 3