

Find average rate of change for the function over the given interval.

1) $y = x^2 + 6x$ between $x = 4$ and $x = 8$

A) 28

B) 9

C) 18

D) 14

1) _____

Find the instantaneous rate of change for the function at the value given.

2) Find the instantaneous rate of change for the function $x^2 + 7x$ at $x = 8$.

Provide an appropriate response.

3) Use the four step process to find $f'(x)$ for the function $f(x) = 5x^2 - 3x$.

4) Find the slope of the secant line joining $(2, f(2))$ and $(3, f(3))$ for $f(x) = -3x^2 - 8$.

5) Find the slope of the graph $f(x) = -x^2 + 3x$ at the point $(1, 2)$.

Solve the problem.

6) Suppose an object moves along the y -axis so that its location is $y = f(x) = x^2 + x$ at time x (y is in meters and x is in seconds). Find the average velocity (the average rate of change of y with respect to x) for x changing from 2 to 9 seconds.

7) Suppose an object moves along the y -axis so that its location is $y = f(x) = x^2 + x$ at time x (y is in meters and x is in seconds). Find the instantaneous velocity at $x = 4$ seconds.

Provide an appropriate response.

8) Find y' if $y = 6x$.

9) Find $f'(x)$ for $f(x) = 2x^5 + 6x^8$.

10) Find the derivative of $y = \frac{3x^5 - 7x^2 - 4}{x^2}$.

11) Find the equation of the tangent line at $x = 2$ for $f(x) = 4 + x - 2x^2 - 3x^3$. Write the answer in the form $y = mx + b$.

12) Suppose that the total profit in hundreds of dollars from selling x items is given by $P(x) = 4x^2 - 5x + 10$. Find the marginal profit at $x = 5$.

13) Let $C(x)$ be the cost function and $R(x)$ the revenue function. Compute the marginal cost, marginal revenue, and the marginal profit functions.

$C(x) = 0.0005x^3 - 0.012x^2 + 100x + 30,000$

$R(x) = 450x$

14) The total cost to produce x units of paint is $C(x) = (5x + 3)(7x + 4)$. Find the marginal average cost function.

15) The total profit from selling x units of doorknobs is $P(x) = (6x - 7)(9x - 8)$. Find the marginal average profit function.

Answer Key

Testname: PRACTICE06

1) C

2) 23

3) $10x + 5h - 3$

4) -15

5) 1

6) 12 m/s

7) 9 m/s

8) 6

9) $10x^4 + 48x^7$

10) $y' = 9x^2 + 8x^{-3}$

11) $y = -43x + 60$

12) \$35

13) $C'(x) = 0.0015x^2 - 0.024x + 100$

$R'(x) = 450$

$P'(x) = -0.0015x^2 + 0.024x + 350$

14) $\bar{C}'(x) = 35 - \frac{12}{x^2}$

15) $\bar{P}'(x) = 54 - \frac{56}{x^2}$