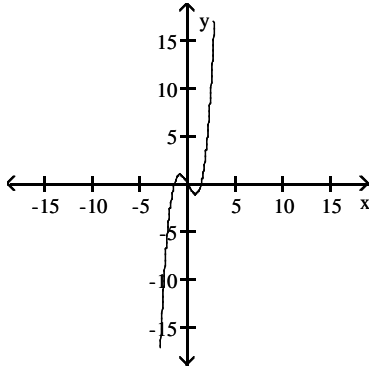Chapter 3 Sample Quiz– Calculus

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.
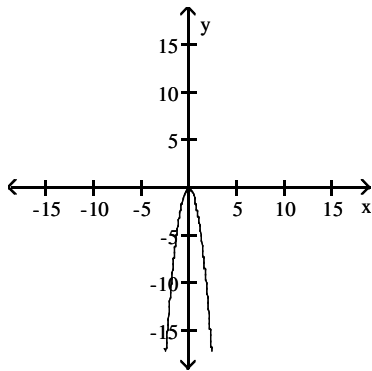
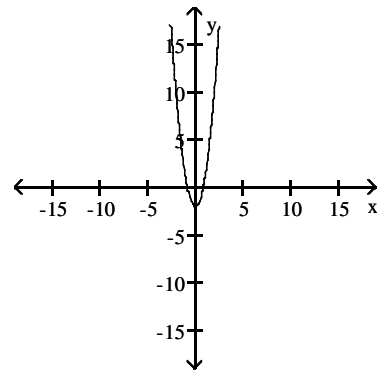**The graph of a function is given. Choose the answer that represents the graph of its derivative.**
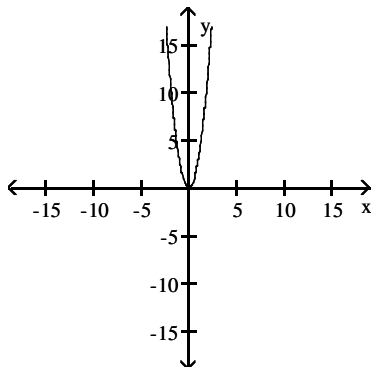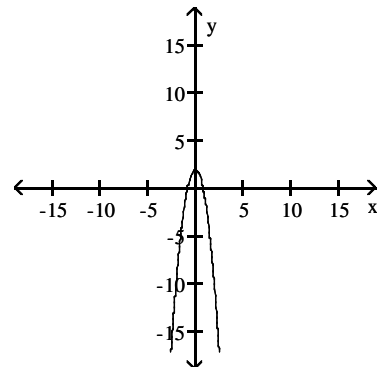
   1)

1) _____

A)

B)

C)

D)

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Suppose u and v are differentiable functions of x. Use the given values of the functions and their derivatives to find the value of the indicated derivative.

   2) $u(2) = 7$, $u\ '(2) = 3$, $v(2) = -1$, $v\ '(2) = -4$.

2) _____

$$\frac{d}{dx}\,(uv) \text{ at } x = 2$$

Find dy/dx.

3) $y = \dfrac{5x^2 + x - 1}{x^3 - 5x^2}$

3) _____

4) $y = \dfrac{1}{2}x^{10} - \dfrac{1}{4}x^4$

4) _____

5) $y = (x^2 - 2x + 2)(5x^3 - x^2 + 5)$

5) _____

6) $y = 2x^2 + 11x + 5x^{-3}$

6) _____

If the function is not differentiable at the given value of x, tell whether the problem is a corner, cusp, vertical tangent, or a discontinuity.

7) $y = \dfrac{-1}{x + 9}$, at $x = -9$

7) _____

Find the horizontal tangents of the curve.

8) $y = 3x^2 - 30x + 76$

8) _____

Solve the problem.

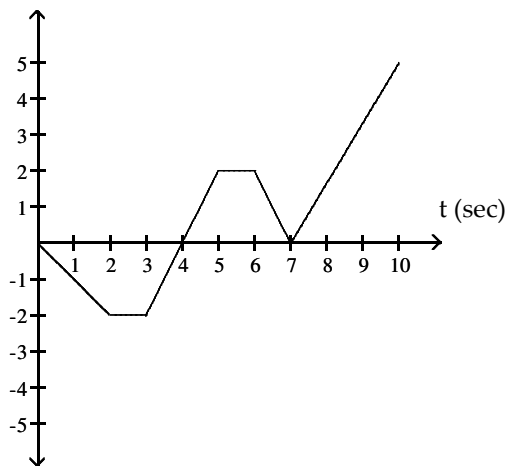9) If $y = x^3 - 9x - 5$, find an equation of the tangent line to the graph of y at $x = 3$.

9) _____

10) At time t, the position of a body moving along the s-axis is $s = t^3 - 21t^2 + 120t$ m. Find the body's acceleration each time the velocity is zero.

10) _____

The figure shows the velocity v of a body moving along a coordinate line as a function of time t . Use the figure to answer the question.

11)   v (ft/sec)

11) _____

When is the body's acceleration equal to zero?

Determine the values of x for which the function is differentiable.

12) $y = \dfrac{1}{x^2 - 9}$

12) _____

1) B
2) –31
3) $\dfrac{-5x^4 - 2x^3 + 8x^2 - 10x}{(x^3 - 5x^2)^2}$
4) $5x^9 - x^3$
5) $25x^4 - 44x^3 + 36x^2 + 6x - 10$
6) $4x + 11 - 15x^{-4}$
7) discontinuity
8) At $x = 5$
9) $y = 18x - 59$
10) $a(10) = 18$ m/sec^2, $a(4) = -18$ m/sec^2
11) $2 < t < 3, 5 < t < 6$
12) All reals except –3 and 3