Calculus Web Assignments

Web Assignments are intended to be completed with a partner. Both partners should individually work each of the problems, followed by a collaborative discussion about the problem.

Both partners are required to participate in the "Honor-System" Grading of the Web Assignment.

Calculus: Web Assignment #6

Multiple Choice

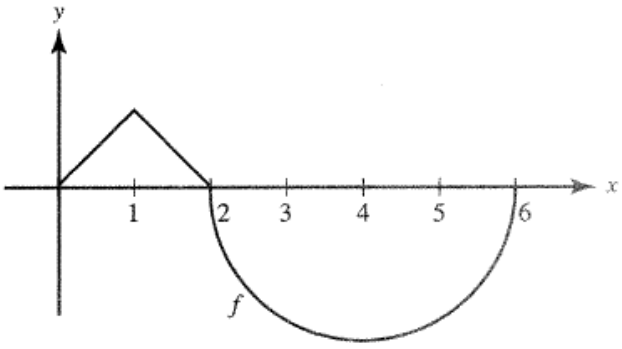
Identify the choice that best completes the statement or answers the question.

____ 1. A differentiable function f has values shown. Estimate $f'(1.5)$.

x	1.0	1.2	1.4	1.6
$f(x)$	8	10	14	22

a. 8
b. 12
c. 18
d. 40
e. 80

____ 2. Given the graph of f, $f'(x)$ does not exist for $x =$

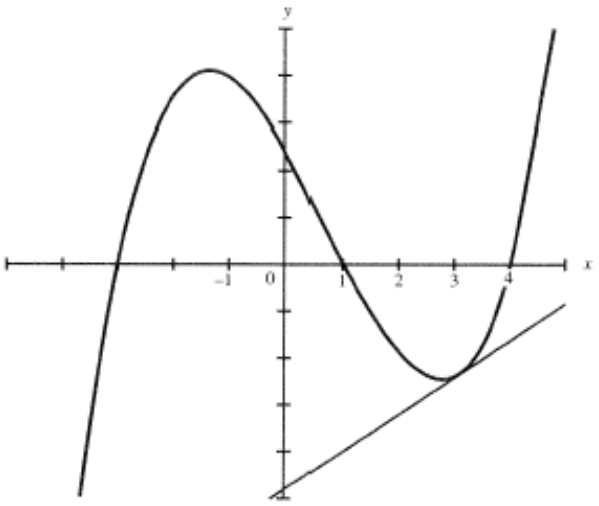


a. 1 only
b. 2 only
c. 1 and 2
d. 2 and 6
e. 1, 2, and 6

____ 3. If $f(x) = \dfrac{x}{(x-1)^2}$ then the set of x's for which $f'(x)$ exists is

a. all reals
b. all reals except $x = 1$ and $x = -1$
c. all reals except $x = -1$
d. all reals except $x = \dfrac{1}{3}$ and $x = -1$
e. all reals except $x = 1$

____ 4. Use this graph of $y = f(x)$ to answer the following question:



$f'(3)$ is most closely approcimated by

a. 0.3
b. 0.8
c. 1.5
d. 1.8
e. 2

____ 5. At $x = 4$ the function give by $h(x) = \begin{cases} x^2 & x \le 4 \\ 4x & x > 4 \end{cases}$ is

a. Undefined
b. Continuous but not differentiable
c. Differentiable but not continuous
d. Neither continuous nor differentiable
e. Both continuous and differentiable

____ 6. Which of the following is/are true about the function g if $g(x) = \dfrac{(x-2)^2}{x^2 + x - 6}$?

I. g is continuous at $x = 2$
II. The graph of g has a vertical asymptote at $x = -3$
III. The graph of g has a horizontal asymptote at $y = 0$

a. I only
b. II only
c. III only
d. I and II only
e. II and III only

____ 7. 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. $y = -2x$
d. $y = 2x - 3$
e. $y = 7x - 8$

____ 8. If $f(x) = \sin x$, then $f'\left(\frac{\pi}{3}\right) =$

a. $-\frac{1}{2}$

b. $\frac{1}{2}$

c. $\frac{\sqrt{2}}{2}$

d. $\frac{\sqrt{3}}{2}$

e. $\sqrt{3}$

____ 9. 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 particles at rest?

a. No values
b. 1 only
c. 3 only
d. 5 only
e. 1 and 3

____ 10. If $y = 2\cos\left(\frac{x}{2}\right)$, then $\frac{d^2y}{dx^2} =$

a. $-8\cos\left(\frac{x}{2}\right)$

b. $-2\cos\left(\frac{x}{2}\right)$

c. $-\sin\left(\frac{x}{2}\right)$

d. $-\cos\left(\frac{x}{2}\right)$

e. $-\frac{1}{2}\cos\left(\frac{x}{2}\right)$