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.

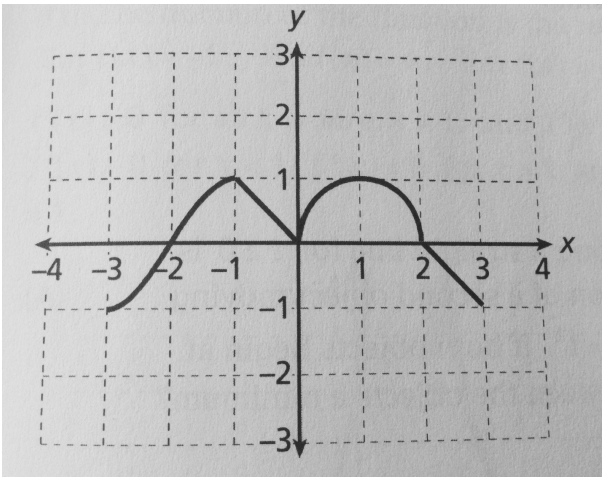
Both partners are required to participate in the "Honor-System" Grading of the Web Assignment.

Calculus: Web Assignment #9

Multiple Choice

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

____ 1. The graph of $f'(x)$ is given below for $x \in [-3, 3]$. On which interval(s) is the function $f(x)$ both increasing and concave up?



a. $(-2, 2)$

b. $(-2, 0) \cup (0, 2)$

c. $(-3, -2)$

d. $(-2, -1) \cup (0, 1)$

e. None of These

____ 2. For the function $f(x) = 12x^5 - 5x^4$, how many of the inflection points of the function are also extrema?

a. 4
b. 3
c. 2
d. 1
e. None

____ 3. The position of an object moving along a striaght line for $t \geq 0$ is given by $s_1(t) = t^3 + 2$, and the position of a second object moving along the same line is given by $s_2(t) = t^2$. If both objects begin at $t = 0$, at what time is the distance between the objects a minimum?

a. 2
b. $\frac{50}{27}$
c. $\frac{2}{3}$
d. 0
e. None of These

____ 4. What value of *c* in the open interval $(0, 4)$ satisfies the Mean Value Theorem for $f(x) = \sqrt{3x+4}$?

a. 0
b. $\frac{2}{3}$
c. $\frac{5}{3}$
d. 2
e. 3

____ 5. If $f'(x) = \dfrac{(x+1)x^2}{(x-1)^{\frac{1}{3}}}$ then on which interval(s) is the continous function $f(x)$ increasing?

a. $(-1, 1)$

b. $(-\infty, -1) \cup (1, \infty)$

c. $(-\infty, 0) \cup (1, \infty)$

d. $(-\infty, -1) \cup (0, \infty)$

e. $(1, \infty)$

____ 6. Evaluate: $\lim\limits_{x \to \infty} \dfrac{\sqrt{x^2 - 14}}{3 - 2x}$

a. $-\infty$

b. $-\dfrac{1}{2}$

c. $\dfrac{1}{2}$

d. $\dfrac{\sqrt{14}}{3}$

e. ∞

____ 7. Base on the graph of $g''(x)$ pictured below, how many points of inflection exist for the twice differentiable function $g(x)$ on the interval $-4 < x < 4$?

a. 6
b. 5
c. 4
d. 3
e. 2

____ 8. Estimate the value of the following limit by graphing the function $f(x) = \dfrac{(2\sin x)}{(\sin \pi x)}$. State your answer correct to two decimal places.

$$\lim_{x \to 0} \frac{2\sin x}{\sin \pi x}$$

a. 3.14
b. 2.01
c. 1.0
d. 0
e. 0.64

____ 9. How would you define $f(3)$ in order to make f continuous at 3?

$$f(x) = \frac{x^2 - x - 6}{x - 3}$$

a. $f(3) = 5$
b. $f(3) = 0$
c. $f(3) = 1$
d. $f(3) = -5$
e. none of these

____ 10. Choose an equation from the following that expresses the fact that a function f is continuous at the number 6.

a. $\lim_{x \to 0} f(x) = 6$

b. $\lim_{x \to 6} f(x) = f(6)$

c. $\lim_{x \to 0} f(x) = f(6)$

d. $\lim_{x \to 6} f(x) = -\infty$

e. $\lim_{x \to 6} f(x) = \infty$