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 #19

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

____ 1. Use implicit differentiation to find an equation of the tangent line to the curve at the given point.

$$y\sin 2x = x\cos 2y, \quad \left(\frac{\pi}{2}, \frac{\pi}{4}\right)$$

Select the correct answer.

a. $y = \dfrac{x}{4} + \dfrac{\pi}{8}$

b. $y = \dfrac{x}{4}$

c. $y = \dfrac{x}{2}$

d. $y = 2x - \dfrac{3\pi}{4}$

e. $y = -\dfrac{x}{2} + \dfrac{\pi}{2}$

____ 2. Find the number c that satisfies the conclusion of the Mean Value Theorem on the given interval.

$$f(x) = 2\sqrt{x}, \quad [0,9]$$

Select the correct answer.

a. $c = 9/4$
b. $c = 0$
c. $c = 1/4$
d. $c = 5$
e. none of these

3. Find the area of the region that lies under the given curve. Round the answer to three decimal places.

$y = \sqrt{2x+2}, \ 0 \le x \le 1$

Select the correct answer.

a. 1.834
b. 1.727
c. 1.704
d. 1.724
e. 1.824

4. Find the average value of the function $f(t) = t\sin\left(t^2\right)$ on the interval $[0,20]$. Round your answer to 3 decimal places.

Select the correct answer.

a. 0.381
b. 0.008
c. 0.028
d. 0.038
e. none of these

5. Find the volume of the solid obtained by rotating the region bounded by the given curves about the specified axis.

$y = x^2 + 4, \ y = 12 - x^2 ; \text{about } y = -1$

Select the correct answer.

a. 384π
b. 128π
c. 128
d. 96π
e. none of these

____ 6. An equation for a tangent to the graph of $y = \arcsin\dfrac{x}{2}$ at the origin is

    a. $x - 2y = 0$
    b. $x - y = 0$
    c. $x = 0$
    d. $y = 0$
    e. $\pi x - 2y = 0$

____ 7. $\dfrac{d}{dx}\left(\ln e^{2x}\right) =$

    a. $\dfrac{1}{e^{2x}}$

    b. $\dfrac{2}{e^{2x}}$

    c. $2x$
    d. 1
    e. 2

____ 8. If a function f is continuous for all x and if f has a relative maximum at (-1, 4) and a relative minimum at (3, -2), which of the following statements must be true?

    a.   The graph of f has a point of inflection somewhere between $x = -1$ and $x = 3$.
    b. $f'(-1) = 0$
    c.   The graph of f has a horizontal asymptote.
    d.   The graph of f has a horizontal tangent line at $x = 3$.
    e.   The graph of f intersects both axes

____ 9. $\dfrac{d}{dx}(\arcsin 2x) =$

    a. $\dfrac{-1}{2\sqrt{1 - 4x^2}}$ d. $\dfrac{2}{\sqrt{1 - 4x^2}}$

    b. $\dfrac{-2}{\sqrt{4x^2 - 1}}$ e. $\dfrac{2}{\sqrt{4x^2 - 1}}$

    c. $\dfrac{1}{2\sqrt{1 - 4x^2}}$

____ 10. The position of a particle moving along a straight line at any time t is given by $s(t) = t^2 + 4t + 4$. What is the acceleration of the particle when $t = 4$?

   a. 0
   b. 2
   c. 4
   d. 8
   e. 12