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.

<mark>**Calculus: Web Assignment #24**</mark>

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

____ 1. Find the maximum or minimum point(s) of the function.

$$F(x) = \left(1 - x^2\right)^2 + 6x^2$$

Select the correct answer.

   a. $\left(-8.6, 6\right)$
   b. $\left(0, 1\right)$
   c. $\left(8, 0\right)$
   d. $\left(-8, 2\right)$
   e. $\left(16, 1\right)$

____ 2. If $3x^2 + 2xy + y^2 = 2$, then the value of $\dfrac{dy}{dx}$ at x = 1 is

   a. 2
   b. -2
   c. 4
   d. not defined
   e. 0

____ 3. $\lim\limits_{\theta \to 0} \dfrac{\sin^2 2\theta}{2\theta} =$

   a. -1
   b. 1
   c. $-\infty$
   d. ∞
   e. 0

____ 4. Find the indefinite integral.

$$\int x \ln(x-8)\, dx$$

a. $\left(\dfrac{x^2-64}{2}\right)\ln(x-8) - \dfrac{x^2+16x}{4} + C$

b. $\left(\dfrac{x^2-64}{2}\right)\ln(x-8) - \dfrac{x^2+16x}{2} + C$

c. $\left(\dfrac{x^2+64}{2}\right)\ln(x-8) - \dfrac{x^2-8x}{4} + C$

d. $\left(\dfrac{x^2-64}{2}\right)\ln(x-8) + \dfrac{x^2+8x}{4} + C$

e. $\left(\dfrac{x^2-64}{2}\right)\ln(x-8) + \dfrac{x^2+16x}{4} + C$

____ 5. $\displaystyle\int_{1}^{e^2} \dfrac{\ln x^2}{x}\, dx =$

a. 4
b. 6
c. 2
d. 10
e. 8

____ 6. Evaluate the integral if it exists.

$$\int \left(\frac{1-x}{x} \right)^2 dx$$

Select the correct answer.

a. does not exist

b. $x - 2\ln x - \dfrac{1}{x} + C$

c. $x - \dfrac{1}{2\ln x} + C$

d. $\ln x - x + C$

e. $2 - \ln x + C$

____ 7. Use the graph of the function to state the value of $\lim\limits_{x \to 0} f(x)$, if it exists.

$$f(x) = \frac{1}{1 + 3^{1/x}}$$

a. $-\infty$

b. $-\dfrac{1}{4}$

c. 0

d. does not exist

e. ∞

____ 8. Evaluate the limit $\lim\limits_{x \to \infty} \dfrac{\ln\left(x^3\right)}{x^{10}}$ using L'Hopital's Rule if necessary.

a. $-\infty$

b. $\dfrac{10}{3}$

c. 0

d. $\dfrac{3}{10}$

e. ∞

____ 9. Differentiate the function.

$$B(y) = cy^{-6}$$

Select the correct answer.

a. $B'(y) = -\dfrac{7c}{y^6}$

b. $B'(y) = -\dfrac{c}{6y^7}$

c. $B'(y) = -\dfrac{6c^7}{y}$

d. $B'(y) = \dfrac{7c}{y^6}$

e. $B'(y) = -\dfrac{6c}{y^7}$

____ 10. $\left(\dfrac{d}{dx}\right) \displaystyle\int_{3}^{2x^2} \left(e^t\right) dt =$

a. e^x

b. e^{2x^2}

c. $e^{2x^2} - e^3$

d. $4xe^{2x^2}$

e. $4xe^{2x^2} - e^3$