

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 #13

Multiple Choice

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

- _____ 1. If the position of a particle on the x-axis at time t is $-5t^2$, then the average velocity of the particle for $0 \leq t \leq 3$ is
- a. -45
 - b. -30
 - c. -15
 - d. -10
 - e. -5

- _____ 2. Which of the following functions are continuous for all real numbers x ?

- I. $y = x^{\frac{2}{3}}$
- II. $y = e^x$
- III. $y = \tan x$

- a. None
- b. I only
- c. II only
- d. I and II
- e. I and III

_____ 3. The slope of the line tangent to the graph of $y = \ln(x^2)$ at e^2 is

a. $\frac{1}{e^2}$

b. $\frac{2}{e^2}$

c. $\frac{4}{e^2}$

d. $\frac{1}{e^4}$

e. $\frac{4}{e^4}$

_____ 4. If $y = x^2 e^x$, then $\frac{dy}{dx} =$

a. $2xe^x$

b. $2x + e^x$

c. $x(x + 2e^x)$

d. $2x + e$

e. $xe^x(x + 2)$

_____ 5. If $f(x) = e^x \sin x$, then the number of zeros of f on the closed interval $[0, 2\pi]$ is

a. 0

b. 1

c. 2

d. 3

e. 4

_____ 6. $\frac{d}{dx} (\ln e^{2x}) =$

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

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

c. $2x$

d. 1

e. 2

_____ 7. $\frac{d}{dx} (x^{\ln x}) =$

a. $x^{\ln x}$

b. $(\ln x)^x$

c. $\frac{2}{x} (\ln x) (x^{\ln x})$

d. $(\ln x) (x^{\ln x - 1})$

e. $2(\ln x) (x^{\ln x})$

_____ 8. If $y = \cos^2 3x$, then $\frac{dy}{dx} =$

a. $-6 \sin 3x \cos 3x$

b. $-2 \cos 3x$

c. $2 \cos 3x$

d. $6 \cos 3x$

e. $2 \sin 3x \cos 3x$

_____ 9. If $\lim_{x \rightarrow 3} f(x) = 7$, which of the following must be true?

- I. f is continuous at $x = 3$.
- II. f is differentiable at $x = 3$.
- III. $f(3) = 7$

- a. None
- b. II only
- c. III only
- d. I and II only
- e. I, II, and III

_____ 10. The $\lim_{h \rightarrow 0} \frac{\tan 3(x+h) - \tan 3x}{h}$ is

- a. 0
- b. $3 \sec^2(3x)$
- c. $\sec^2(3x)$
- d. $3 \cot(3x)$
- e. nonexistent