

# 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 #1

### Multiple Choice

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

\_\_\_\_\_ 1. Determine  $\lim_{x \rightarrow 5} (2x^2 - 4x + 7)$  by substitution.

- a. 7  
b. 12  
c. 37  
d. 47

\_\_\_\_\_ 2. Find  $\lim_{x \rightarrow 2} \frac{x^2 + x - 6}{x - 2}$ , if it exists.

- a. 0  
b. 3  
c. 5  
d. DNE

\_\_\_\_\_ 3. Let  $f(x) = \begin{cases} x^2 - 2 & x < 1 \\ -\frac{1}{2}x + 1 & x \geq 1 \end{cases}$  What is  $\lim_{x \rightarrow 1^+} f(x)$  ?

- a. -1  
b.  $\frac{1}{2}$   
c. 1  
d. DNE

\_\_\_\_\_ 4. Find  $\lim_{x \rightarrow 3^+} \frac{x+3}{x-3}$ .

- a. 0  
b. 6  
c.  $-\infty$   
d.  $\infty$

\_\_\_\_\_ 5. Which of the following is a horizontal asymptote for  $f(x) = \frac{6x^2 + 2x - 4}{2x^2 + 3x + 2}$  ?

- a.  $y = -3$
- b.  $y = -2$
- c.  $y = 2$
- d.  $y = 3$

\_\_\_\_\_ 6. Find  $\lim_{x \rightarrow -\infty} \frac{|8x + 6|}{4x - 2}$

- a. -3
- b. -2
- c. 3
- d. 4

\_\_\_\_\_ 7. Find  $\lim_{x \rightarrow 0} \frac{\sin 2x}{3x}$

- a. 0
- b.  $\frac{2}{3}$
- c. 1
- d. DNE

\_\_\_\_\_ 8. Which statement is true about the curve  $y = \frac{2x^2 + 4}{2 + 7x - 4x^2}$

- a. The line  $x = -\frac{1}{4}$  is a vertical asymptote.
- b. The line  $x = 1$  is a vertical asymptote.
- c. The graph has no vertical or horizontal asymptote.
- d. The line  $y = 2$  is a horizontal asymptote.

\_\_\_\_\_ 9. Let  $f(x) = \begin{cases} \frac{x^2 - 1}{x - 1} & \text{if } x \neq 1 \\ 4 & \text{if } x = 1 \end{cases}$

Which of the following statements is (are) true?

I.  $\lim_{x \rightarrow 1} f(x)$  exists

II.  $f(1)$  exists

III.  $f$  is continuous at  $x = 1$

- a. I only
- b. II only
- c. I and II
- d. All of Them

\_\_\_\_\_ 10. The graph of  $y = \frac{x^2 - 9}{3x - 9}$  has

- a. a vertical asymptote at  $x = 3$
- b. a horizontal asymptote at  $y = \frac{1}{3}$
- c. a removable discontinuity at  $x = 3$
- d. an infinite discontinuity at  $x = 3$
- e. none of these