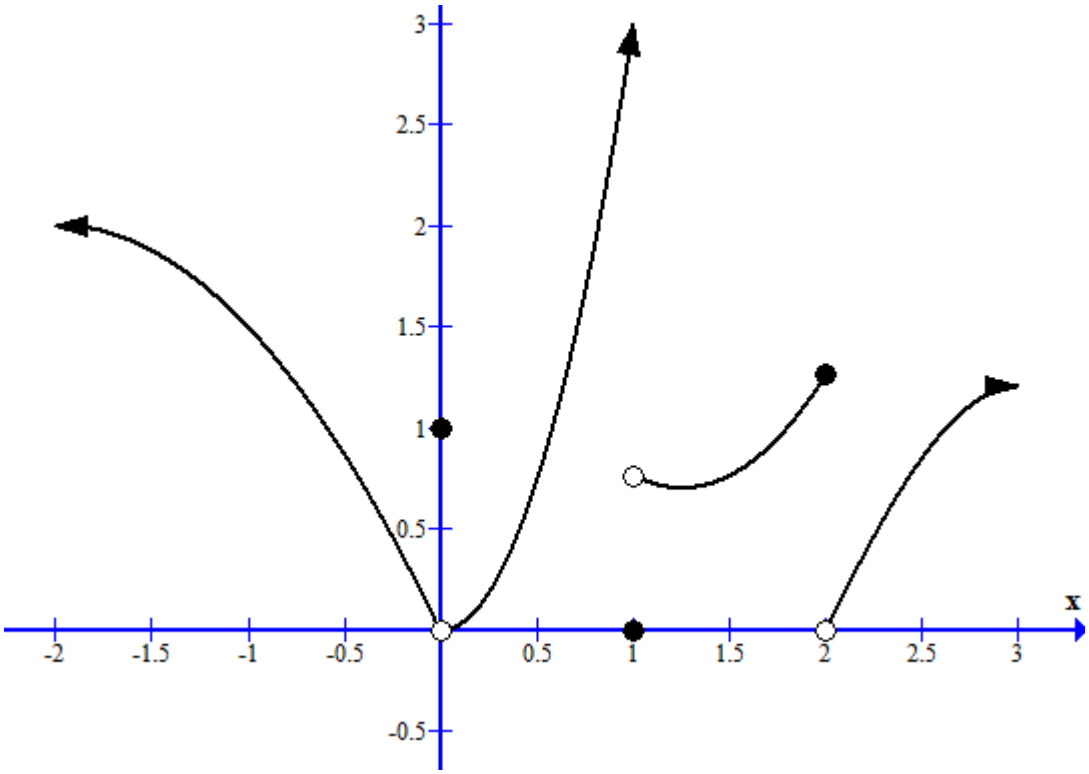
EMCF 05

Log Into CourseWare at http://www.casa.uh.edu
and access the answer sheet by clicking on the EMCF tab.

Directions: Questions 1-3 refer to the graph of $y = f(x)$ below.



1. Give the value of x where f has a removable discontinuity.
   a. -1
   b. 0
   c. 1
   d. 2
   e. 3
   f. None of these.

2. Give the value of x where f has a jump discontinuity.
    a. -1
    b. 0
    c. 1
    d. 2
    e. 3
    f. None of these.
3. Give the value of x where f has an infinite discontinuity.
    a. -1
    b. 0
    c. 1
    d. 2
    e. 3
    f. None of these.
4. Give the value of x where $f(x)=\frac{x^2-4}{x^2+x-2}$ has a removable discontinuity.
    a. -2
    b. 2
    c. -1
    d. 1
    e. There is no value of x where f has a removable discontinuity.
    f. None of these.
5. Give the value of x where $f(x)=\frac{x^2-4}{x^2+x-2}$ has a jump discontinuity.
    a. -2
    b. 2
    c. -1
    d. 1
    e. There is no value of x where f has a jump discontinuity.
    f. None of these.
6. Give the value of x where $f(x)=\frac{x^2-4}{x^2+x-2}$ has an infinite discontinuity.
    a. -2
    b. 2
    c. -1
    d. 1
    e. There is no value of x where f has an infinite discontinuity.
    f. None of these.

7. Which of the following best describes the behavior of $f(x)=\frac{x+1}{|x+1|}$ at $x = -1$.

   a. Jump discontinuity.
   b. Removable discontinuity.
   c. Infinite discontinuity.
   d. The function is continuous.
   e. All of these.
   f. None of these.

8. Give the values of x where $f(x)=\frac{x-1}{x^2-4x+3}$ is continuous.

   a. All x except $x = 3$.
   b. All x except $x = 1$ and $x = -3$.
   c. All x except $x = 1$.
   d. All x except $x = 1$ and $x = 3$.
   e. All x.
   f. None of these.

9. $\lim_{x\to 0}\frac{\tan(x)}{x} =$ (Hint: Rewrite tangent in terms of sine and cosine.)

   a. -1
   b. 0
   c. 1
   d. DNE
   e. 1/2
   f. None of these.

10. $\lim_{r\to 0}\frac{r}{\sin(2r)} =$

    a. -1
    b. 0
    c. 1
    d. DNE
    e. 1/2
    f. None of these.

11. $\lim_{u\to 0}\frac{\sin(4u)}{u\cos(u)} =$

    a. -1
    b. 0
    c. 1
    d. DNE
    e. 4
    f. None of these.

12. $\lim_{w\to 0}\frac{(w+1)\sin(2w)}{\sin(3w)} =$

a. 1
b. 0
c. DNE
d. 2/3
e. 3/2
f. None of these.

13. $\lim_{x\to 1}\frac{\sin(3x)}{x} =$ (Look closely at the limit!!)

a. 3
b. -3
c. DNE
d. 0
e. 1
f. None of these.

14. $\lim_{x\to 0}\frac{\sin(7x)}{\sin(x)} =$

a. 7
b. 1
c. DNE
d. 1/7
e. 0
f. None of these.

15. Give the value x where the function $f(x)=\frac{\sqrt{x}-1}{x-1}$ has an infinite discontinuity.

a. 1
b. -1
c. There is no such value.
d. 0
e. 2
f. None of these.