

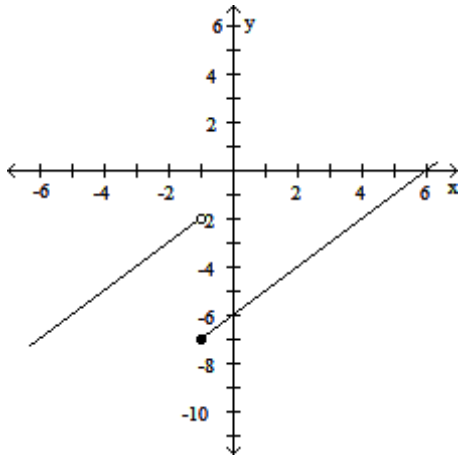
Determine the limit by substitution.

1) $\lim_{x \rightarrow 0} \frac{x^3 - 6x + 8}{x - 2}$

- A) -4 B) 4 C) 0 D) Does not exist

Determine the limit graphically, if it exists.

2) Find $\lim_{x \rightarrow 1^-} f(x)$ and $\lim_{x \rightarrow 1^+} f(x)$ and $\lim_{x \rightarrow 1} f(x)$



- A) -2; -7, DNE B) -7; -5, DNE C) -5; -2, DNE D) -7; -2, DNE

Provide an appropriate response.

3) Find $\lim_{x \rightarrow 0} x \cos\left(\frac{1}{x}\right)$

- A) 1 B) 0.0007 C) Does not exist D) 0

Find the limit, if it exists.

4) $\lim_{x \rightarrow 2} \frac{x^2 + 8x + 7}{x^3 - 9x^2 + 11}$

- A) 1 B) ∞ C) $\frac{7}{11}$ D) 0

5) $\lim_{x \rightarrow \infty} \frac{-8x^2 + 9x + 6}{-15x^2 + 7x + 17}$

- A) $\frac{6}{17}$ B) ∞ C) $\frac{8}{15}$ D) 1

$$6) \lim_{x \rightarrow \infty} \frac{5x^3 + 4x^2}{x - 5x^2}$$

A) $-\frac{4}{5}$

B) 5

C) $-\infty$

D) ∞

$$7) \lim_{x \rightarrow \infty} \frac{\cos 4x}{x}$$

A) ∞

B) 4

C) 1

D) 0

$$8) \lim_{x \rightarrow \infty} \frac{-3 + \left(\frac{2}{x}\right)}{6 - \left(\frac{1}{x^2}\right)}$$

A) $\frac{1}{2}$

B) $-\frac{1}{2}$

C) ∞

D) ∞

Find the indicated limit.

$$9) \lim_{x \rightarrow \infty} \frac{\sin(3x)}{x}$$

A) 0

B) 1

C) ∞

D) 3

Find the limit.

$$10) \lim_{x \rightarrow (-2)^+} \frac{1}{x+2}$$

A) $1/2$

B) $-1/2$

C) ∞

D) $-\infty$

$$11) \lim_{x \rightarrow (\pi/2)^+} \tan x$$

A) ∞

B) 0

C) $-\infty$

D) 1

Find the average rate of change of the function over the given interval.

12) $f(x) = x^2 + 5x$, $[1, 8]$

A) 14

B) 13

C) $\frac{49}{4}$

D) $\frac{104}{7}$

13) Given the function $x^2 - 8x + 17$ and the point $(3, 2)$, which limit would you choose to begin the process of finding the derivative.

A) $\lim_{h \rightarrow 0} \frac{(3+h)^2 - 8(3+h) + 17 - 2}{h-3}$

B) $\lim_{h \rightarrow 0} \frac{(3+h)^2 - 8(3+h) + 17 + 2}{h}$

C) $\lim_{h \rightarrow 0} \frac{(3+h)^2 - 8(3+h) + 17 - 2}{h}$

D) $\lim_{h \rightarrow 3} \frac{(3+h)^2 - 8(3+h) + 17 + 2}{h}$

14) Given the function $x^2 - 8x + 17$ and the point $(3, 2)$, which limit would you choose to begin the process of finding the derivative.

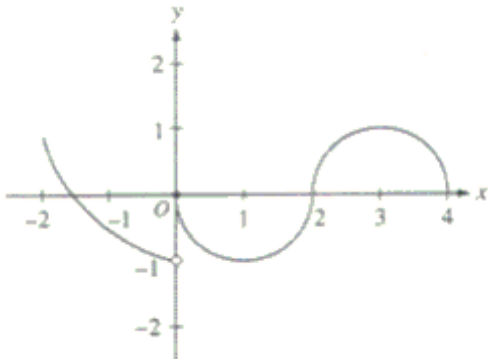
A) $\lim_{x \rightarrow 3} \frac{x^2 - 8x + 17 + 2}{x}$

B) $\lim_{x \rightarrow 3} \frac{x^2 - 8x + 17 + 2}{x-3}$

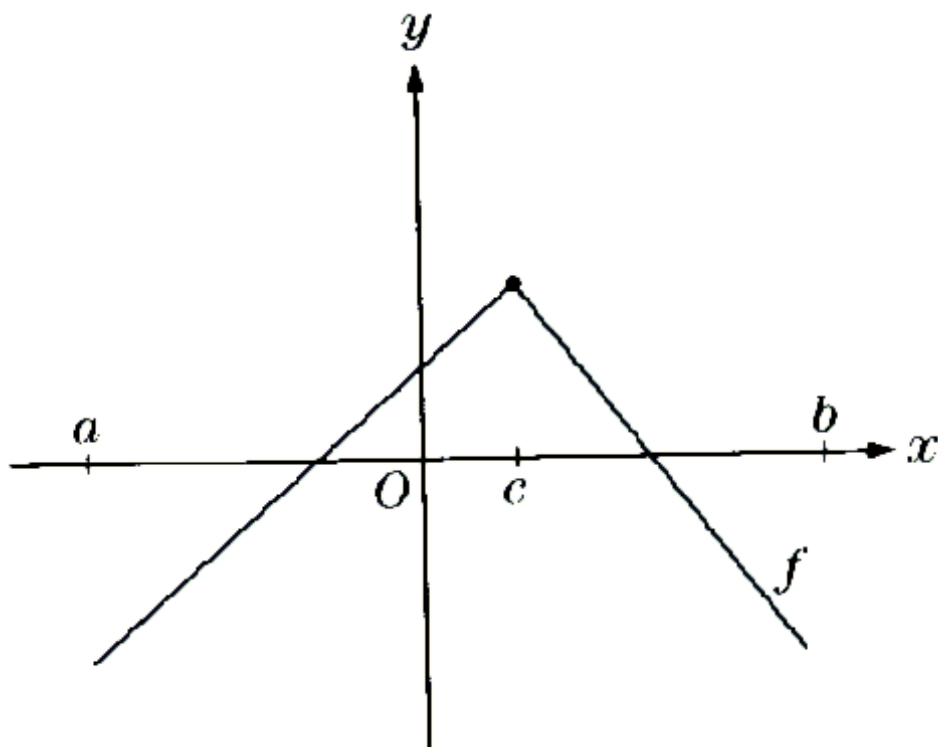
C) $\lim_{x \rightarrow 3} \frac{x^2 - 8x + 17 - 2}{x+3}$

D) $\lim_{x \rightarrow 3} \frac{x^2 - 8x + 17 - 2}{x-3}$

15) The graph of the function f shown in the figure above has a vertical tangent at the point $(2, 0)$ and horizontal tangents at the points $(1, -1)$ and $(3, 1)$. For what values of x from $-2 < x < 4$ is f not differentiable.



- a. 0 only
- b. 0 and 2 only
- c. 1 and 3 only
- d. 0, 1, and 3 only
- e. 0, 1, 2, and 3



16)

GR:Chapter 3A (3.1-3.:KT2611002

The function f , whose graph consists of two line segments, is shown. Which of the following are true on the open interval (a, b) ?

- I. The domain of the derivative of f is the open interval (a, b)
- II. f is continuous on the open interval (a, b)
- III. The derivative of f is positive on the open interval (a, c)

- a) I only
- b) II only
- c) III only
- d) II and III only
- e) I, II, and III