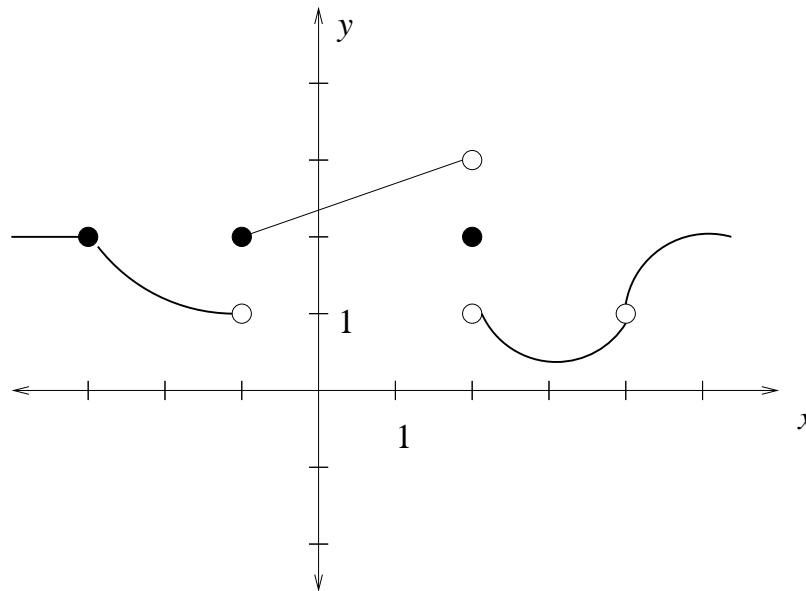Name: _____   Quiz Score: _____ /25

Quiz 1: Version A

Show your reasoning. Use standard notation correctly.

1. (10 points) The function f is depicted below.

(a) Find each of the following or state "does not exist" ("dne").

$$\lim_{x \to -3^-} f(x) = \text{_____}$$

$$\lim_{x \to -1^-} f(x) = \text{_____}$$

$$\lim_{x \to 2^-} f(x) = \text{_____}$$

$$\lim_{x \to 4^-} f(x) = \text{_____}$$

$$\lim_{x \to -3^+} f(x) = \text{_____}$$

$$\lim_{x \to -1^+} f(x) = \text{_____}$$

$$\lim_{x \to 2^+} f(x) = \text{_____}$$

$$\lim_{x \to 4^+} f(x) = \text{_____}$$

$$\lim_{x \to -3} f(x) = \text{_____}$$

$$\lim_{x \to -1} f(x) = \text{_____}$$

$$\lim_{x \to 2} f(x) = \text{_____}$$

$$\lim_{x \to 4} f(x) = \text{_____}$$

$$f(-3) = \text{_____}$$

$$f(-1) = \text{_____}$$

$$f(2) = \text{_____}$$

$$f(4) = \text{_____}$$

(b) Circle YES or NO for each of the following.

   i. Is f continuous at -3?   YES   NO

   ii. Is f continuous at -1?   YES   NO

   iii. Is f continuous at 2?   YES   NO

   iv. Is f continuous at 4?   YES   NO

2. (5 points) Find the average rate of change of $f(x) = x^2 - 7x$ over the interval $[1, 3]$.

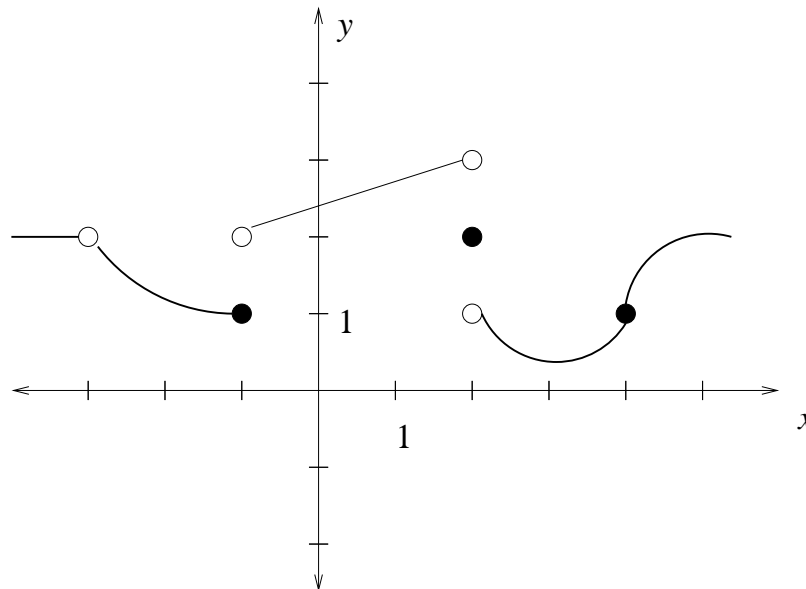3. (10 points)

(a) State the definition of derivative.

$f'(x) =$

(b) Find the derivative $f'(x)$ of the function $f(x) = 3x^2 - 10x + 5$ *using the definition of derivative.*

Name: _____ Quiz Score: _____ /25

Quiz 1: Version B

Show your reasoning. Use standard notation correctly.

1. (10 points) The function f is depicted below.

(a) Find each of the following or state "does not exist" ("dne").

$$\lim_{x \to -3^-} f(x) = \text{_____}$$

$$\lim_{x \to -1^-} f(x) = \text{_____}$$

$$\lim_{x \to 2^-} f(x) = \text{_____}$$

$$\lim_{x \to 4^-} f(x) = \text{_____}$$

$$\lim_{x \to -3^+} f(x) = \text{_____}$$

$$\lim_{x \to -1^+} f(x) = \text{_____}$$

$$\lim_{x \to 2^+} f(x) = \text{_____}$$

$$\lim_{x \to 4^+} f(x) = \text{_____}$$

$$\lim_{x \to -3} f(x) = \text{_____}$$

$$\lim_{x \to -1} f(x) = \text{_____}$$

$$\lim_{x \to 2} f(x) = \text{_____}$$

$$\lim_{x \to 4} f(x) = \text{_____}$$

$$f(-3) = \text{_____}$$

$$f(-1) = \text{_____}$$

$$f(2) = \text{_____}$$

$$f(4) = \text{_____}$$

(b) Circle YES or NO for each of the following.

    i. Is f continuous at -3?   YES   NO

    ii. Is f continuous at -1?   YES   NO

    iii. Is f continuous at 2?   YES   NO

    iv. Is f continuous at 4?   YES   NO

2. (5 points) Find the average rate of change of $f(x) = x^2 - 5x$ over the interval $[1, 3]$.

3. (10 points)
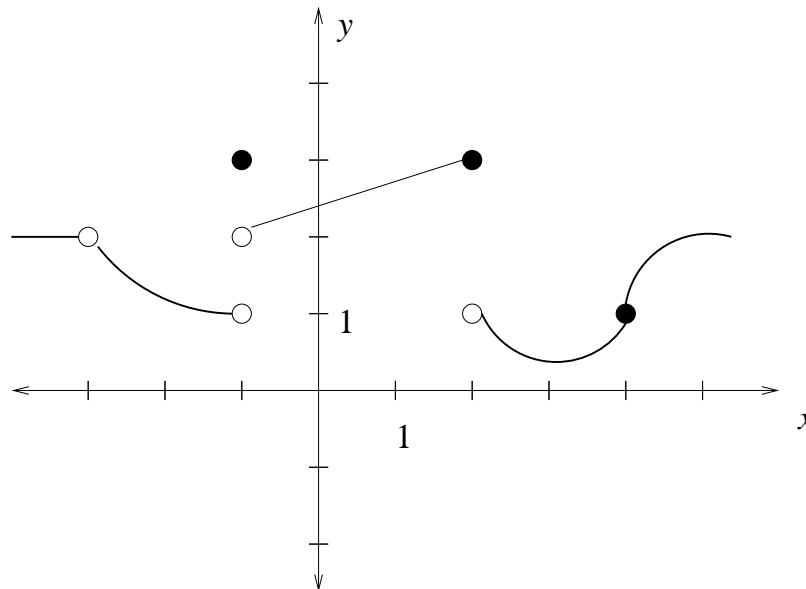
   (a) State the definition of derivative.

   $$f'(x) =$$

   (b) Find the derivative $f'(x)$ of the function $f(x) = 2x^2 - 3x + 8$ *using the definition of derivative.*

Name: _____ Quiz Score: _____ /25

Quiz 1: Version C

Show your reasoning. Use standard notation correctly.

1. (10 points) The function f is depicted below.

(a) Find each of the following or state "does not exist" ("dne").

$$\lim_{x \to -3^-} f(x) = \underline{\hspace{1cm}}$$
$$\lim_{x \to -3^+} f(x) = \underline{\hspace{1cm}}$$
$$\lim_{x \to -3} f(x) = \underline{\hspace{1cm}}$$
$$f(-3) = \underline{\hspace{1cm}}$$

$$\lim_{x \to -1^-} f(x) = \underline{\hspace{1cm}}$$
$$\lim_{x \to -1^+} f(x) = \underline{\hspace{1cm}}$$
$$\lim_{x \to -1} f(x) = \underline{\hspace{1cm}}$$
$$f(-1) = \underline{\hspace{1cm}}$$

$$\lim_{x \to 2^-} f(x) = \underline{\hspace{1cm}}$$
$$\lim_{x \to 2^+} f(x) = \underline{\hspace{1cm}}$$
$$\lim_{x \to 2} f(x) = \underline{\hspace{1cm}}$$
$$f(2) = \underline{\hspace{1cm}}$$

$$\lim_{x \to 4^-} f(x) = \underline{\hspace{1cm}}$$
$$\lim_{x \to 4^+} f(x) = \underline{\hspace{1cm}}$$
$$\lim_{x \to 4} f(x) = \underline{\hspace{1cm}}$$
$$f(4) = \underline{\hspace{1cm}}$$

(b) Circle YES or NO for each of the following.

    i. Is f continuous at -3?   YES   NO

    ii. Is f continuous at -1?   YES   NO

    iii. Is f continuous at 2?   YES   NO

    iv. Is f continuous at 4?   YES   NO

2. (5 points) Find the average rate of change of $f(x) = x^2 - 10x$ over the interval $[1, 3]$.

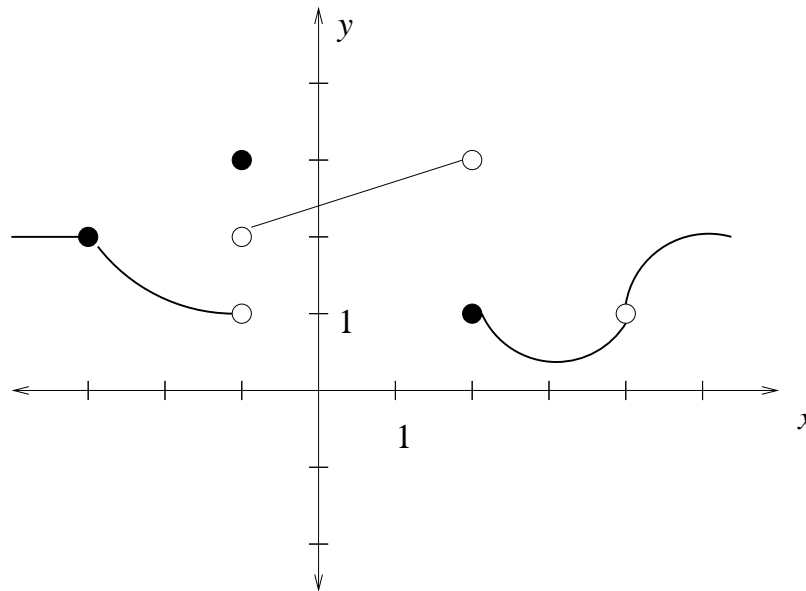3. (10 points)

(a) State the definition of derivative.

$f'(x) =$

(b) Find the derivative $f'(x)$ of the function $f(x) = 5x^2 - 4x - 7$ *using the definition of derivative*.

Name: _____   Quiz Score: _____ /25

Quiz 1: Version D

Show your reasoning. Use standard notation correctly.

1. (10 points) The function f is depicted below.

(a) Find each of the following or state "does not exist" ("dne").

$\lim\limits_{x \to -3^-} f(x) = $ _____	$\lim\limits_{x \to -1^-} f(x) = $ _____	$\lim\limits_{x \to 2^-} f(x) = $ _____	$\lim\limits_{x \to 4^-} f(x) = $ _____
$\lim\limits_{x \to -3^+} f(x) = $ _____	$\lim\limits_{x \to -1^+} f(x) = $ _____	$\lim\limits_{x \to 2^+} f(x) = $ _____	$\lim\limits_{x \to 4^+} f(x) = $ _____
$\lim\limits_{x \to -3} f(x) = $ _____	$\lim\limits_{x \to -1} f(x) = $ _____	$\lim\limits_{x \to 2} f(x) = $ _____	$\lim\limits_{x \to 4} f(x) = $ _____
$f(-3) = $ _____	$f(-1) = $ _____	$f(2) = $ _____	$f(4) = $ _____

(b) Circle YES or NO for each of the following.

     i. Is f continuous at -3?   YES   NO

     ii. Is f continuous at -1?   YES   NO

     iii. Is f continuous at 2?   YES   NO

     iv. Is f continuous at 4?   YES   NO

2. (5 points) Find the average rate of change of $f(x) = x^2 - 4x$ over the interval $[1, 3]$.

3. (10 points)

(a) State the definition of derivative.

$$f'(x) =$$

(b) Find the derivative $f'(x)$ of the function $f(x) = 9x^2 - 3x - 2$ *using the definition of derivative.*