

Exam

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

1) Find the domain of the function: $f(x) = \frac{\sqrt{x-1}}{x^2-9}$ 1) _____

2) Find the domain of the function: $f(x) = \sqrt{x-11}$ 2) _____

3) If $g(s) = \frac{3}{s-2} - s$, find: 3) _____

- (a) the domain
- (b) $g(0)$
- (c) $g(3)$
- (d) $g(-4)$
- (e) $g\left(\frac{1}{s}\right)$

4) If $f(x) = 3x - 1$, find $\frac{f(x+h) - f(x)}{h}$ 4) _____

5) If $f(x) = 4 - x^2$, find $\frac{f(x+h) - f(x)}{h}$ 5) _____

6) If $f(x) = 4x^2 + 6x$, find $f(3s)$. 6) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

7) The domain of the function $f(x) = \frac{\sqrt{x+2}}{x^2-16}$ is 7) _____

- A) all real numbers ≥ -2
- B) all real numbers ≥ -2 except 4
- C) all real numbers except 4 and -4
- D) all real numbers ≥ 2 except 4
- E) all real numbers ≥ 2

8) If $f(x) = x^2 - 3x + 4$, then $f(2+h) - f(2) =$ 8) _____

- A) h .
- B) $h^2 - 3h - 4$.
- C) $h^2 + h - 4$.
- D) $h^2 + h$.
- E) $h^2 - 3h + 4$.

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9) If $f(x) = \frac{1}{2x+3}$, then find $\frac{f(x+h) - f(x)}{h}$ and simplify. 9) _____

10) If $f(x) = 7$, find $f(14)$. 10) _____

11) If $f(x) = |1 - 2x| + 2x$, find: (a) $f(1)$ and (b) $f(-1)$. 11) _____

12) Given the function $f(x) = \begin{cases} 3, & \text{if } x \geq 2 \\ -3, & \text{if } x < 2, \end{cases}$ find: 12) _____

- (a) the domain
- (b) $f(0)$
- (c) $f(2)$
- (d) $f(-2)$
- (e) $f(-3)$

13) Given the function $G(x) = \begin{cases} 4, & \text{if } x > 0 \\ x + 5, & \text{if } x \leq 0, \end{cases}$ find: 13) _____

- (a) the domain
- (b) $G(0)$
- (c) $G(6)$
- (d) $G(-4)$
- (e) $G(-10)$

14) 14) _____

Given the function $f(x) = \begin{cases} x^2, & \text{if } -1 < x < 0 \\ 2x + 1, & \text{if } 0 \leq x < 1, \\ -x, & \text{if } 1 \leq x < 2 \end{cases}$

find:

- (a) the domain
- (b) $f(0)$
- (c) $f(1)$
- (d) $f\left(-\frac{1}{2}\right)$
- (e) $f\left(\frac{1}{2}\right)$
- (f) $f\left(\frac{3}{2}\right)$

15)

$$\text{If } f(x) = \begin{cases} x^2, & \text{if } x < 0 \\ 4x, & \text{if } 0 \leq x \leq 1 \\ x, & \text{if } x > 1 \end{cases}, \text{ find}$$

- (a) $f(-2)$
 (b) $f(0)$
 (c) $f\left(\frac{1}{4}\right)$
 (d) $f(1)$
 (e) $f(5)$

15) _____

16) If $f(x) = 2x + 3$ and $g(x) = x^2 - 4x - 2$, find:

- (a) $(f + g)(x)$
 (b) $(f - g)(x)$
 (c) $(fg)(x)$
 (d) $\left(\frac{f}{g}\right)(x)$
 (e) $f(g(x))$
 (f) $g(f(x))$
 (g) $f(g(1))$
 (h) $g(f(1))$

16) _____

17) Let $f(x) = x^2 + 3x + 1$ and $g(x) = -2$.

- (a) Find: $(f \circ g)(x)$
 (b) Find: $(g \circ f)(x)$

17) _____

18) If $h(x) = (2x - 3)^5$, find functions f and g such that $h(x) = f(g(x))$.

18) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

19) If $f(x) = \sqrt{x - 3}$ and $g(x) = x^2 - 7$, then $f(g(7)) =$

- A) 81. B) $\sqrt{42}$. C) $\sqrt{39}$. D) 84. E) -3.

19) _____

20) If $f(x) = \sqrt{x + 5}$ and $g(x) = x^2 - 3x - 5$, then the value of $(f \circ g)(4)$ is

- A) $2\sqrt{3}$. B) -4. C) 2. D) 5. E) -3.

20) _____

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21) If $f(x) = \frac{x + 1}{x - 7}$ and $g(x) = 2x^3$, find $(f \circ g)(x)$.

21) _____

22) Determine the x - and y -intercepts of the graph of $y = x^2 + x - 12$.

22) _____

23) Determine the x - and y -intercepts of the graph of $y = \frac{7 - 14x}{(x + 2)(x - 1)}$.

23) _____

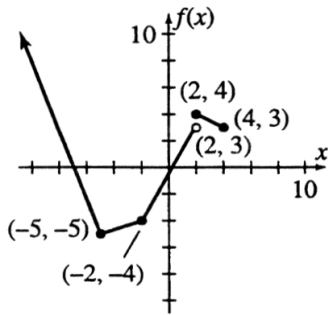
24) (a) Sketch the graph of $y = f(x) = 2x + 6$. (b) Determine the intercepts. State (c) the domain and (d) the range of f .

24) _____

25) By looking at the graph below:

25) _____

- (a) list all values for which $f(x) = 0$
- (b) $f(2) =$
- (c) $f(-2) =$
- (d) domain of f is?
- (e) range of f is?



26) Sketch a graph of $y = |2x - 5|$

26) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

27) To obtain a graph of $y = 7(x - 1)^2$ from the graph of $y = 7x^2$, which of the following statements is true?

27) _____

- A) shift 1 unit to the right
- B) shift 1 unit up
- C) shift 1 unit down
- D) shift 1 unit to the left
- E) none of the above

28) To obtain a graph of $y = 7x^2 + 3$ from the graph of $y = 7x^2$, which of the following statements is true?

28) _____

- A) shift 3 units to the left
- B) shift 3 units down
- C) shift 3 units up
- D) shift 3 units to the right
- E) none of the above