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The exam consists of multiple choice questions. Record your answers on this page. For each multiple choice question, you will need to fill in the circle corresponding to the correct answer. For example, if (a) is correct, you must write

a b c d e

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GOOD LUCK!

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For grading use:

Number Correct	
(out of 20 problems)	

Total	
(out of 100 points)	

Name: _____

Multiple Choice Questions

*Show all your work on the page where the question appears.
Clearly mark your answer both on the cover page on this exam
and in the corresponding questions that follow.*

1. The point $(-2, 3)$ is on the graph of which of these equations?

Possibilities:

- (a) $y = x - 5$
- (b) $y = x^2 + 7$
- (c) $y + 3 = 4(x - 2)$
- (d) $y = x^2 - 1$
- (e) $y = -2x + 3$

-
2. Which of these equations says “the distance between $(x, 1)$ and $(2, 3)$ is 4?”

Possibilities:

- (a) $\sqrt{(x - 1)^2 + (2 - 3)^2} = 4$
 - (b) $\left(\frac{x + 2}{2}, \frac{1 + 3}{2}\right) = 4$
 - (c) $x - 1 = 4$
 - (d) $\frac{3 - 1}{2 - x} = 4$
 - (e) $\sqrt{(x - 2)^2 + (1 - 3)^2} = 4$
-

3. What is the y -intercept of the line given by

$$y + 1 = 2(x + 3)?$$

Possibilities:

- (a) 2
- (b) 5
- (c) 3
- (d) 7
- (e) 6

4. Find an equation for the line through $(1, 2)$ and $(6, 9)$.

Possibilities:

- (a) $y = \frac{7}{5}x + 2$
- (b) $y - 1 = \frac{5}{7}(x - 2)$
- (c) $y - 2 = \frac{7}{5}(x - 1)$
- (d) $y - 2 = \frac{9}{6}(x - 1)$
- (e) $y + 2 = \frac{7}{5}(x + 1)$

-
5. A 20 cup mixture is 30% water and 70% bleach. How many cups of water should be added so that the resulting mixture is 50% bleach?

Possibilities:

- (a) 20
- (b) 8
- (c) 10
- (d) 40
- (e) 4

-
6. Suppose Alice and Bob are driving. If we let x represent Alice's speed in mph and suppose Bob drives 10 mph slower than Alice does, which of these expressions gives the distance that Bob drove in 3 hours?

Possibilities:

- (a) $(x - 10) \cdot 3$
- (b) $\frac{x - 10}{3}$
- (c) $(x + 10) \cdot 3$
- (d) $\frac{x + 10}{3}$
- (e) $10 \cdot (x + 3)$

-
7. A pizza delivery place tries to encourage large orders by charging the same delivery fee no matter how many pizzas you order. If an order for 10 large pizzas costs \$121 (including the fee), but an order for 15 large pizzas costs \$178.50, how much is the delivery fee?

Possibilities:

- (a) \$12.10
- (b) \$21
- (c) \$6
- (d) \$10
- (e) \$11.90

-
8. Let

$$f(x) = 2x + 3$$

Compute $\frac{f(x+h) - f(x)}{h}$.

Possibilities:

- (a) $1 + h$
- (b) $2x + 3 + h$
- (c) $2x + 3h$
- (d) 2
- (e) $(2h + 6)/h$

-
9. Let

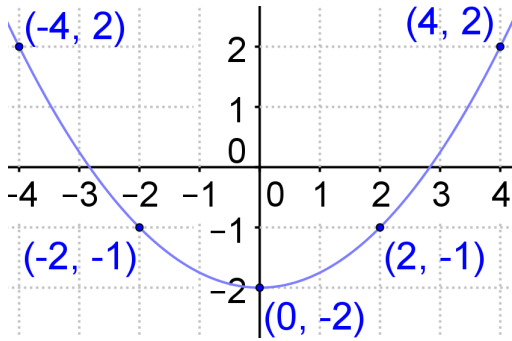
$$f(x) = x^2 + 3$$

Compute $\frac{f(x+h) - f(x)}{h}$.

Possibilities:

- (a) $2x + h$
- (b) $1 + h$
- (c) $2x + 3 + h$
- (d) 1
- (e) $(6 + h)/h$

10. The following graph defines y as a function of x :

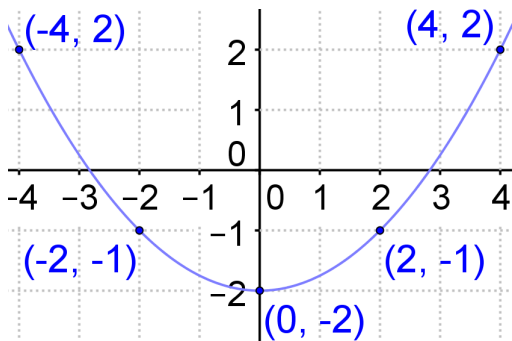


An input of 2 is assigned to what output?

Possibilities:

- (a) -4
- (b) 0
- (c) 2
- (d) 4
- (e) -1

11. The following graph defines y as a function of x :



What input(s) are assigned to an output of 2?

Possibilities:

- (a) -1 only
- (b) 0
- (c) -4 and 4
- (d) 4 only
- (e) -4 only

12. Let

$$f(x) = \begin{cases} 2x + 1 & x \leq 3 \\ 4x & x > 3 \end{cases}.$$

What is $f(5)$?

Possibilities:

- (a) 5
- (b) 11
- (c) 20
- (d) 15
- (e) 10

13. What is the average rate of change of $x^2 - 3x$ from $x = -1$ to $x = 2$?

Possibilities:

- (a) -2
- (b) -6
- (c) 3
- (d) $\frac{2}{3}$
- (e) 2

14. What is the domain of $f(x) = \sqrt{x - 3}$?

Possibilities:

- (a) $[-3, \infty)$
 - (b) $(-\infty, 3) \cup (3, \infty)$
 - (c) $(-\infty, 3]$
 - (d) $[-3, 3]$
 - (e) $[3, \infty)$
-

15. What is the domain of

$$f(x) = \frac{1}{x-3}?$$

Possibilities:

- (a) $(-\infty, -3) \cup (-3, \infty)$
- (b) $(-\infty, 3) \cup (3, \infty)$
- (c) $(-\infty, 3)$
- (d) $(-\infty, 0) \cup (0, \infty)$
- (e) $(-3, \infty)$

16. Solve

$$-4x + 8 \leq -12$$

Possibilities:

- (a) 5
- (b) $(-\infty, 5]$
- (c) $[3, \infty)$
- (d) $[5, \infty)$
- (e) $(-\infty, 3]$

17. Solve

$$2x + 3 > 4x - 5$$

Possibilities:

- (a) $(-\infty, 4)$
 - (b) $(-4, \infty)$
 - (c) $(4, \infty)$
 - (d) $(-\infty, -4)$
 - (e) $(-4, 4)$
-

18. Find an equation for a linear function $f(x) = mx + b$ such that $f(1) = -3$ and $f(3) = 1$.

Possibilities:

(a) $y = 3x + 1$

(b) $y = -2x - 1$

(c) $y = x - 3$

(d) $y = 2x - 3$

(e) $y = 2x - 5$

19. Let

$$f(x) = -2x + 3.$$

Solve

$$f(x) = 9.$$

Possibilities:

(a) -15

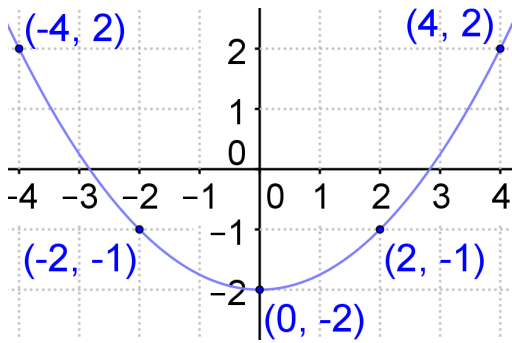
(b) -3

(c) -6

(d) 9

(e) No solution

20. The following graph defines y as a function of x :



The average rate of change from $x = -2$ to $x = 2$ is

Possibilities:

- (a) 1
- (b) $-\frac{1}{2}$
- (c) -1
- (d) 0
- (e) Undefined

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