

Below is a review for your test! Do your best work and read all directions--especially on second page. If you do not follow precisely, you will not get credit for this assignment. You are preparing for your test--work hard and purposefully!

Determine the outputs for the following relations and the given inputs.

- |  |   |   |
|--|---|---|
| <p>1. <math>x=2</math><br/> <br/> <math>f(x) = -2x + 4</math><br/> <math>f(x) = ?</math></p> | <p>2. <math>x=-6</math><br/> <br/> <math>f(x) =  x - 2 </math><br/> <math>f(x) = ?</math></p> | <p>3. <math>x=9</math><br/> <br/> <math>f(x) = \sqrt{x} + 1</math><br/> <math>f(x) = ?</math></p> |
| <p>4. <math>f(x) = (5 - x)^2</math><br/> <math>f(8) = ?</math></p>                           | <p>5. <math>g(x) = x^2 - 5</math><br/> <math>g(-3) = ?</math></p>                             | <p>6. <math>f(x) = \frac{2x+7}{x^2-9}</math><br/> <math>f(3) = ?</math></p>                       |
| <p>7. <math>h(x) = 5 - \sqrt{x}</math><br/> <math>h(9) = ?</math></p>                        | <p>8. <math>h(x) = \sqrt{5-x}</math><br/> <math>h(9) = ?</math></p>                           | <p>9. <math>f(x) = -x^2</math><br/> <math>f(4) = ?</math></p>                                     |

**Answers**

- |  |   |  |
|--|---|--|
| 1. $f(2) = 0$  | 2. $f(-6) = 8$  | 3. $f(9) = 4$  |
| 4. $f(8) = 9$  | 5. $g(-3) = 4$  | 6. not possible  |
| 7. $f(9) = 2$  | 8. not possible   | 9. $f(4) = -16$  |
| 10. Yes, each input has one output; domain is all numbers, range is $-1 \leq y \leq 3$                       | 11. No, for example $x = 0$ has two outputs; domain is $x \geq -3$ , range is all numbers | 12. Yes; domain all numbers, range is $-3 \leq y \leq 3$   |
| 13. No; $x = -1$ has two outputs; domain is $-4, -3, -1, 0, 1, 2, 3, 4$ , range is $-4, -3, -2, -1, 0, 1, 2$ | 14. Yes; domain is all numbers, range is $y \geq -2$                                      | 15. No, many inputs have two outputs; domain is $-2 \leq x \leq 4$ , range is $-2 \leq y \leq 4$ |

Determine if each relation is a function. Then state its domain and range.

- |             |             |             |
|-------------|-------------|-------------|
| <p>10. </p> | <p>11. </p> | <p>12. </p> |
| <p>13. </p> | <p>14. </p> | <p>15. </p> |

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Is the slope of each line negative, positive, or zero?

- |            |            |            |
|------------|------------|------------|
| <p>1. </p> | <p>2. </p> | <p>3. </p> |
|------------|------------|------------|

**Answers**

- |                           |   |  |
|---------------------------|---|--|
| 1. zero                   | 2. negative                               | 3. positive                            |
| 4. Slope = 3, steeper, up | 5. Slope = $-\frac{1}{2}$ , flatter, down | 6. Slope = $\frac{1}{3}$ , flatter, up |
| 7. Slope = 4, steeper, up | 8. Slope = $\frac{1}{2}$ , flatter, up    | 9. Slope = 4, steeper, up              |

Identify the slope in each equation. State whether the graph of the line is steeper or flatter than  $y = x$  or  $y = -x$ , whether it goes up or down from left to right, or if it is horizontal or vertical.

- |                 |                            |                           |
|-----------------|----------------------------|---------------------------|
| 4. $y = 3x + 2$ | 5. $y = -\frac{1}{2}x + 4$ | 6. $y = \frac{1}{3}x - 4$ |
| 7. $4x - 3 = y$ | 8. $y = -2 + \frac{1}{2}x$ | 9. $3 + 2y = 8x$          |
| 10. $y = 2$     | 11. $x = 5$                | 12. $6x + 3y = 8$         |

- |                           |                                  |                                  |
|---------------------------|----------------------------------|----------------------------------|
| 10. Slope = 0, horizontal | 11. Slope is undefined, vertical | 12. Slope = $-2$ , steeper, down |
| 13. $-\frac{27}{8}$       | 14. $\frac{3}{15} = \frac{1}{5}$ | 15. undefined                    |
| 16. 0                     | 17. $-\frac{16}{59}$             | 18. $-\frac{9}{8}$               |

Without graphing, find the slope of each line based on the given information.

- |  |                                  |                                 |
|--|----------------------------------|---------------------------------|
| 13. $\Delta y = 27 \Delta x = -8$                    | 14. $\Delta x = 15 \Delta y = 3$ | 15. $\Delta y = 7 \Delta x = 0$ |
| 16. Horizontal $\Delta = 6$<br>Vertical $\Delta = 0$ | 17. Between (5, 28) and (64, 12) | 18. Between (-3, 2) and (5, -7) |

Write the equation of the line with the given slope that passes through the given point.

1. slope = 5, (3, 13)      2. slope =  $-\frac{5}{3}$ , (3, -1)      3. slope = -4, (-2, 9)  
4. slope =  $\frac{3}{2}$ , (6, 8)      5. slope = 3, (-7, -23)      6. slope = 2, ( $\frac{5}{2}$ , -2)

**Answers**

1.  $y = 5x - 2$       2.  $y = -\frac{5}{3}x + 4$       3.  $y = -4x + 1$   
4.  $y = \frac{3}{2}x - 1$       5.  $y = 3x - 2$       6.  $y = 2x - 7$   
7.  $y = \frac{3}{5}x$       8.  $y = 4x + 2$       9.  $y = -2x - 10$   
10.  $y = 4x - 4$       11.  $y = \frac{1}{3}x + 7$       12.  $y = 3x + \frac{1}{2}$

Write the equation of the line *parallel* to the given line that goes through the given point.

7.  $y = \frac{3}{2}x + 2$  (0, 0)      8.  $y = 4x - 1$  (-2, -6)      9.  $y = -2x + 5$  (-4, -2)  
10.  $y = 4x + 5$  (-6, -28)      11.  $y = \frac{1}{3}x - 1$  (6, 9)      12.  $y = 3x + 8$  (0,  $\frac{1}{2}$ )

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Write the equation of the line containing each pair of points.

1. (1, 1) and (0, 4)      2. (5, 4) and (1, 1)      3. (1, 3) and (-5, -15)  
4. (-2, 3) and (3, 5)      5. (2, -1) and (3, -3)      6. (4, 5) and (-2, -4)  
7. (1, -4) and (-2, 5)      8. (-3, -2) and (5, -2)      9. (-4, 1) and (5, -2)

**Answers**

1.  $y = -3x + 4$       2.  $y = \frac{3}{4}x + \frac{1}{4}$       3.  $y = 3x$   
4.  $y = \frac{2}{5}x + 3\frac{4}{5}$       5.  $y = -2x + 3$       6.  $y = \frac{3}{2}x - 1$   
7.  $y = -3x - 1$       8.  $y = -2$       9.  $y = -\frac{1}{3}x - \frac{1}{3}$