**Transformations Quest Review**

**Directions:** Be sure to show all work, communicate your thought process, and justify your reasoning. Remember to check that your answers are complete, correct, and reasonable.

1. Sketch a graph of each function, and state its domain and range.

|  |  |
| --- | --- |
| a. y = xcp.bmp | b. Quadratic Parent Functioncp.bmp |
| c. Absolute Value Parent Functioncp.bmp | d. y = -x2 + 5cp.bmp |
| e. y = √(-x – 3)cp.bmp | e. y = -√(x – 3) + 2cp.bmp |

2. r(x) is a radical function reflected the x-axis, twice as wide, & translated left 5 units.

t(x) is defined as . Compare and contrast the domain and range of r(x) and t(x).

3. A function, s(x) is pictured in the graph.

a. q(x) is defined as s(x) – 2. Determine each:

i. 3q(-1) ii. (s – q)(0) iii. q(s(2))

b. *Throwback*:

On which interval is the rate of change the highest? The lowest?

Choices: (-1.5, -1), (-1,0), (0,1), or (1, 1.5)

4. Consider the picture of the arrow and the function h(x) = 3x2 – 4x.

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| --- | --- | --- |
| **Write the EQUATION for the function h. ☺** | **Description of transformation** | **Sketch a picture to represent the transformation movement.** |
| h(x – 3) |  |  |
| -h(x) |  |  |
| h(x) + 2 |  |  |

5. State the parent graph and describe the transformation that occurs.

a. f(x) = -2|x – 3| b. f(x) = -(x – 3)2 + 9

Parent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Parent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Transformation: Transformation:

c. f(x) = -√(x+5) - 1 d. f(x) = ½(x – 10)3

Parent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Parent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Transformation: Transformation:

6. m(x) is the result of contracting n(x) so it is half as wide, and translating n(x) 4 units up & 7 units left.

Choose values for f, g, and h to make the equation, m(x) = f\*n(x + g) – h true.

7. Write an equation for each situation.

|  |  |  |
| --- | --- | --- |
| a. Absolute value function made three times as wide, shifted 2 units right and reflected over the x-axis | b. Macintosh HD:Users:boruch:Desktop:Screen shot 2015-10-18 at 7.56.04 PM.png | c. Square root function reflected over both axis and then shifted up 2 and left 5 units |
| d. The function in part a is then made half as wide, and translated left 3 and down 8 units. | d. Macintosh HD:Users:boruch:Desktop:Screen shot 2016-10-21 at 7.22.38 PM.png | e. Macintosh HD:Users:boruch:Desktop:Screen shot 2016-10-21 at 7.21.35 PM.png |

8. Prove algebraically whether f(x) = 2x3 – x2 + 1 is even, odd, or neither.

9. Match each graph to its equation, and state the domain and range for each.

a. y = |x| b. y = x c. y = √x d. y = -x2 – 3 e. y = x2

|  |  |  |
| --- | --- | --- |
| **Graph** | **Equation** | **Domain & Range** |
| **Macintosh HD:Users:boruch:Desktop:Screen shot 2015-10-18 at 2.34.35 PM.png** |  | Domain:Range: |
| **Macintosh HD:Users:boruch:Desktop:Screen shot 2015-10-18 at 2.34.54 PM.png** |  | Domain:Range: |
| **Macintosh HD:Users:boruch:Desktop:Screen shot 2015-10-18 at 2.35.08 PM.png** |  | Domain:Range: |
| **Macintosh HD:Users:boruch:Desktop:Screen shot 2015-10-18 at 2.35.22 PM.png** |  | Domain:Range: |
| **Macintosh HD:Users:boruch:Desktop:Screen shot 2015-10-18 at 2.35.34 PM.png** |  | Domain:Range: |

10. Consider the graph of b(x).

 a. For what values of x is b(x + 2) undefined?

 ○ x = 0 ○ x = 5 ○ x = 1

 ○ x = 2 ○ x = 7 ○ x = -1

 b. c(x) = b(x) + 1. Determine each:

 -4c(3) (c\*b)(4) c(b(5))

11. Determine the domain & range of each function. Support your answer algebraically.

a. $f\left(x\right)=\left|x-3\right|-5$ b. $k\left(x\right)=\sqrt{-x+8}$ \*\*\*IMPORTANT ONE ☺

12. Indicate whether each function is even, odd, or neither.

Support your answer by describing the property of the graph that assists in determining whether the function is even, odd, or neither.

|  |  |  |
| --- | --- | --- |
| a. Macintosh HD:Users:boruch:Desktop:Screen shot 2015-12-19 at 1.41.02 PM.png | b. Macintosh HD:Users:boruch:Desktop:Screen shot 2015-12-19 at 1.42.04 PM.png | c. Macintosh HD:Users:boruch:Desktop:Screen shot 2015-12-19 at 1.41.20 PM.png |

13. Indicate whether each function is even, odd, or neither. Support your answer algebraically.

a. q(x) = 3x3 – 9x5 + x b. f(x) = 4x10 – 8x2 + 2x c. g(x) = 3x4 + 7x2

14. The domain of a function, d(x) is ****and the range is****

Determine the change in the domain or range of each:

a. –d(x) b. d(-x) c. d(x + 1) d. d(x) - 7

15. The domain of a function, v(x) is ****and the range is****

Determine the change in the domain or range of each:

a. –v(x) b. v(-x) c. v(x - 9) d. v(x) + 3