HW 6.1 Answers

1. no; 3 repeats
2. yes
3. yes
4. no; fails the vertical line test
5. yes
6. no; circle, fails the vertical line test
7. h(-4) = -14
8. g(-2) = -7
9. f(-3) = 5/7
10. k(-3) = 9
11. f(n + 2) = 2n - 1
12. h(n + 1) = n^2 + 2
13. g(n-1)=$4n^2$ - 4n + 1
14. k(2n + 1) = -6n - 1

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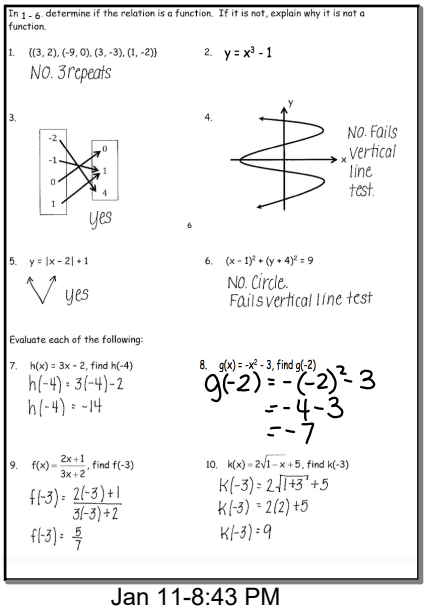

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11. f(x) = 2x - 5, find f(n + 2)

f(n+2) = 2(n+2) - 5

f(n+2) = 2n - 1

12. h(x) = (x - 1)² + 2, find h(n + 1)

h(n+1) = (n+1-1)² + 2

h(n+1) = n² + 2

13. g(x) = (2x + 1)², find g(n - 1)

g(n-1) = (2(n-1)+1)²

g(n-1) = (2n-1)² = (2n-1)(2n-1)

g(n-1) = 2n(2n-1) - 1(2n-1)

g(n-1) = 4n² - 2n - 2n + 1

g(n-1) = 4n² - 4n + 1

14. k(x) = 2 - 3x, find k(2n + 1)

k(2n+1) = 2 - 3(2n+1)

k(2n+1) = -6n - 1

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Unit 6

Day 2

Domain & Range

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Warm—Up: f(x) = -x² + 3x find f(2x - 1)

f(2x-1) = -(2x-1)² + 3(2x-1)

f(2x-1) = -4x² + 4x - 1 + 6x - 3

f(2x-1) = -4x² + 10x - 4

Aside:

(2x-1)² =

(2x-1)(2x-1)

2x(2x-1) - 1(2x-1)

4x² - 4x + 1

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Domain - The **domain** of a function is the set of all x-values (inputs), independent variable

Range - The **range** of a function is the set of all y-values (outputs), dependent variable

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For the following relations, state the domain and range.

Determine (yes or no) if the relation is a function.

1. {(3, 2), (5, 7), (1, 4), (9, 2), (3, 7)}

   Domain: {3, 5, 1, 9}

   Range: {2, 7, 4}

   Function? no

2. {(6, 2), (3, 5), (9, 0), (5, 7), (8, 5)}

   Domain: {6, 3, 9, 5, 8}

   Range: {2, 5, 0, 7}

   Function? yes

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3. {(1, 1), (2, 3), (3, 4), (4, 2), (5, 1)}

   Domain: {1, 2, 3, 4, 5}

   Range: {1, 3, 4, 2}

   Function? yes

4. {(6, 1), (9, 2), (6, 8), (9, 7), (-8, 3)}

   Domain: {6, 9, -8}

   Range: {1, 2, 8, 7, 3}

   Function? no

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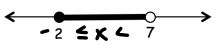
Two Types of Notation: Set-Builder and Interval

Given the number line graph: 

Set-Builder → {x|-2 ≤ x < 7}

Read: The set of all x such that - 2 is less than or equal to x and x is less than 7

Interval Notation → Parentheses and/or brackets are used to show whether the endpoints are excluded or included. For example,

[2, 7) is the **interval** of real numbers between 2 and 7, including 2 and excluding 7.

● [ ]

○ ( )

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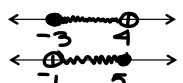
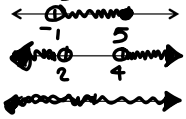
Interval Notation	Set-Builder Notation	Number Line Graph
[-3, 4)	{x | -3 ≤ x < 4}	
(-1, 5]	{x | -1 < x ≤ 5}	
(-∞, 2) or (4, ∞)	{x | x < 2 or x > 4}	
(-∞, ∞)	{x | x ∈ ℝ} "the set of all x such that x is an element of the real numbers."	

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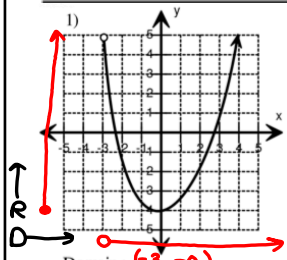
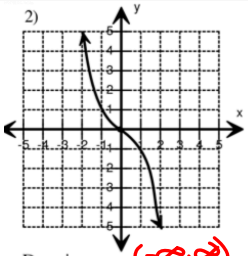
Find the Domain and Range for each graph.

1) 

Domain : (-3, ∞)

Range : [-4, ∞)

2) 

Domain : (-∞, ∞)

Range : (-∞, ∞)

Domain Move from Left to Right

Range Move from Bottom to Top

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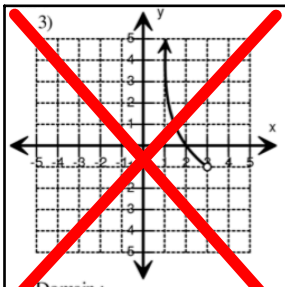
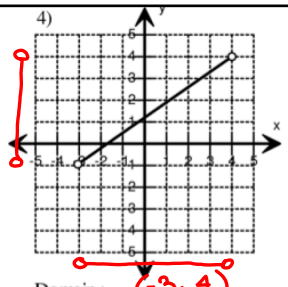
3) 

Domain : _____

Range : _____

4) 

Domain : (-3, 4)

Range : (-1, 4)

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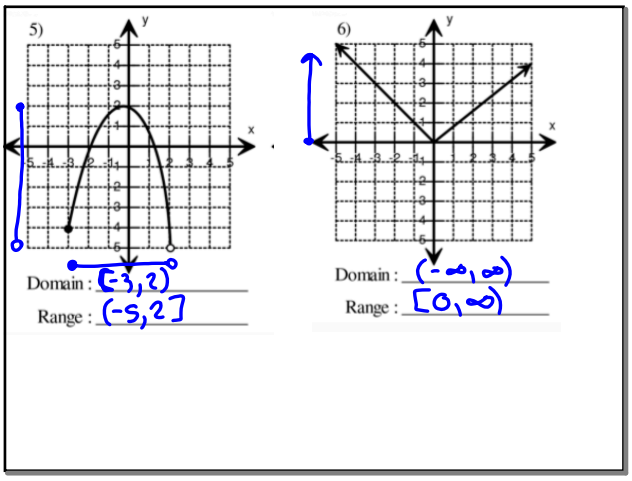

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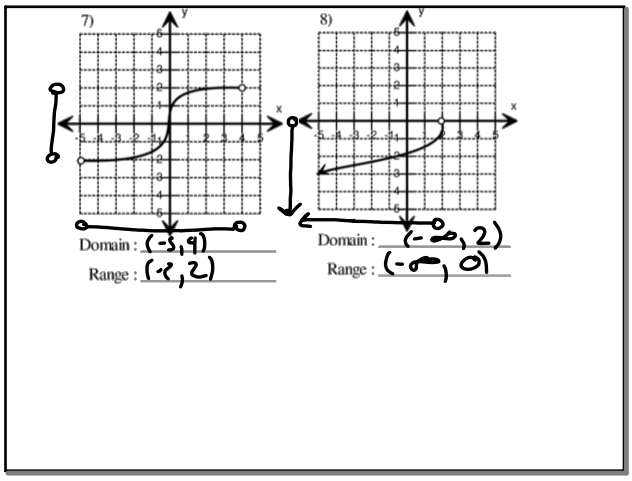

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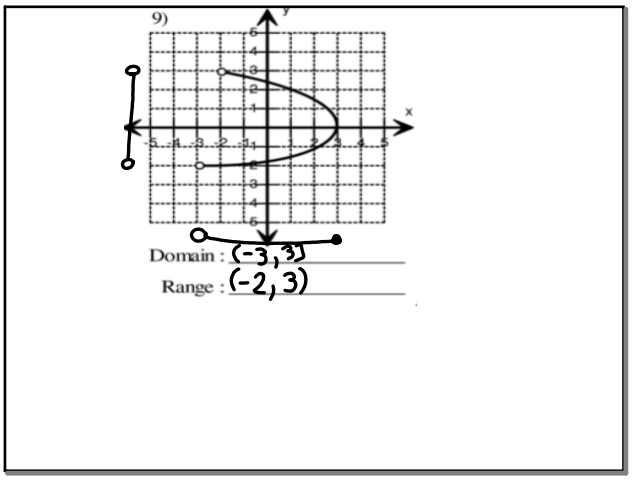

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