Unit 6
Day 1

Review of Functions

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Relation - A set of ordered pairs.

Function - A relation in which each x-value (input) corresponds to exactly one y-value (output)
Means: No repeated x values.

All functions are relations but not all relations are functions.

Function - The input value x is your student ID number and the output value y is the number of pets you have.

Relation - The input value x is the letter grade on the last unit test and the output value y is the ID number of each student enrolled in the course.

Graphically - Vertical line test - A relation is a function if a vertical line does not intersect the graph in more than one point.

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Which relation is a function? Explain why the other is not.

1. A. {(2, 3), (8 3), (4, 8)} yes
   B. {(-1, 4), (-2, 6), (3, 5), (3, 0)} no
      repeated x-values

2. A. Domain Range   B.
   no, A maps to 3 and 4   yes
   C maps 3 and 6

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3. A. $(x-2)^2 = 4(y+3)$ B. $(y+3)^2 = -4(x-2)$

   yes   *If y^2 it will never be a functin*   no, does not pass the vertical line test

4. A.   B.

   No, fails the VLT   Yes

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5. Given the set of points: {(1, 2), (3, 4), (5, 6)} state another point so that the relation is no longer a function. any pt with an x-value of 1, 3, or 5

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Function Notation - f(x) - read "f of x", where x is the input value (domain) and f(x) is the output value (range)

ie: f(2) = 4 would correspond to the point (2, 4).
When x = 2, y = 4.

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Evaluate each of the following:

1. $h(t) = |t + 2| + 3$, find $h(-3)$

$h(-3) = |-3+2| + 3 = |-1| + 3 = 1 + 3 = 4$

2. $g(a) = 3^{3a-2}$, find $g(1)$

$g(1) = 3^{3(1)-2}$

$= 3^1 = 3$

3. $f(x) = -2x^2 + 4$, find $f(4)$

$f(4) = -2(4)^2 + 4 = -2(16) + 4 = -28$

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4. $g(x) = 4x - 2$, find $g(2a)$

$g(2a) = 4(2a) - 2$

$= 8a - 2$

5. $f(x) = x^2 - 2x$, find $f(n^2)$

$= (n^2)^2 - 2(n^2)$

$= n^4 - 2n^2$

6. $h(x) = \sqrt{2x - 3}$, find $h(n + 4)$

$h(n+4) = \sqrt{2(n+4) - 3}$

$= \sqrt{2n+8 - 3}$

$= \sqrt{2n+5}$

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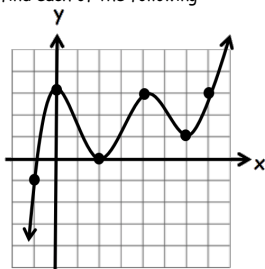7. Given the graph, $f(x)$, at right, find each of the following:

a. $f(-1) =$ __−1__

b. $f(0) =$ __3__

c. $f(2) =$ __0__

d. $f(4) =$ __3__

e. $f(6) =$ __1__

f. $f(7) =$ __3__

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