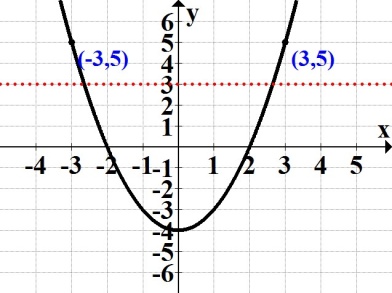
*Review 5.1-5.3 (****Key****)*

1. Determine if the graph represents a one-to-one function.

**The given graph does not represent a one-to-one function; it does not pass the horizontal line test. For example, if we examine the coordinates and , both *x*-values have**

***y*-coordinate 5 (see graph below). In a one-to-one function, any two different inputs will produce two different outputs. So, a horizontal line cannot intersect the graph more than once, which is not the case here.**



2. Determine if the graph represents a function that has an inverse; explain your decision.

**The given graph represents a function that has an inverse; no horizontal line will intersect the graph more than once.**

3. Given , find the domain of the inverse.

**The inverse of the given function is found by interchanging the *x*-and *y*-coordinates:**

**. The domain, D, of the inverse is D = {15, 7, 5, 12}**

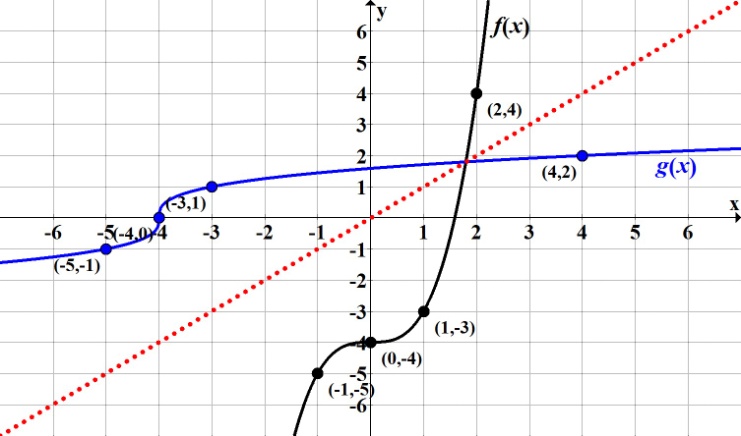
4. Find the inverse function for = .

**Replace with "*y*," interchange the *x* and the *y*, then solve the new equation for *y*; assign name to the resulting inverse function:**

**(9) (9)**

5. Given the graph of , graph its inverse along with *y* = *x*; label the inverse .

**The graphs of a function and its inverse are symmetric about the line *y* = *x*. Therefore, since the points lie on the graph of , we know that the points will lie on the graph of the inverse, .**



6. Luis bought a new car and the total loan (all charges included) is $over a 48 month period. His monthly payment will be $422, with the outstanding amount denoted by

= , where is the number of months paid towards the loan.

a. Find and interpret its meaning.

b.  Find the inverse of the given function.

c. Find and interpret its meaning.

**a. = =**

**After the 26th payment, the outstanding car loan amount is**

**b.**

**c. =**

**If the outstanding amount is , Luis has paid the loan for 45 months.**

***or***

**After the 45th monthly payment, the outstanding car loan amount is**

7. Let and . Find the following. State any restrictions for , when

applicable.

a. b. c.

d. e. f.

**a. ( )() )**

**b. ( • )() )**

**c. ,**

**Note: If , then , and we know division by zero is undefined.**

**d. and**

**Therefore, ( )()**

**Note: Another option is to first find , then evaluate the resulting function at .**

**e. . This means function will be the input for function .**

**) = = =**

**f. To find , first evaluate the *inside* function "" when :**

**= 17**

**Now substitute the resulting value, 17, into "" and evaluate:**

**Note: Another option is to first find the composite function, then evaluate the**

**resulting function at .**

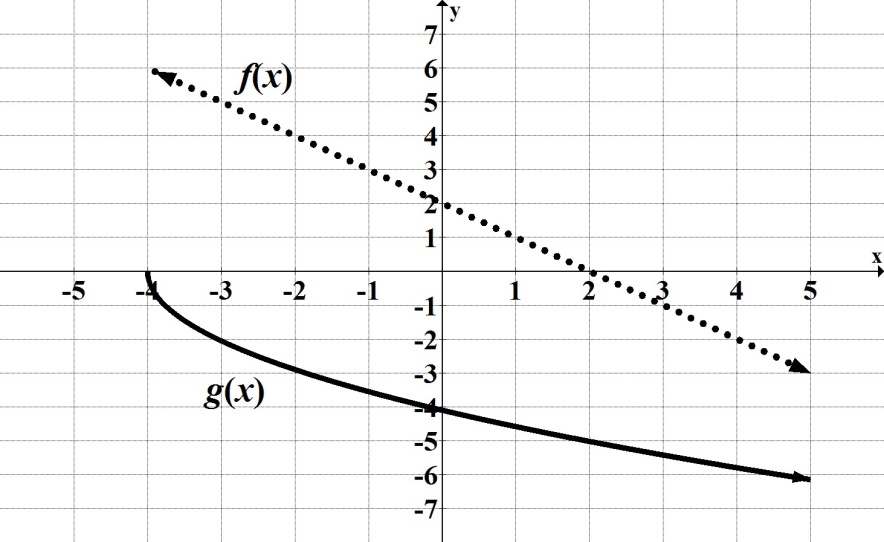
8. Let and . Find the following.

a. b.

**a.**

**b.**

9. Use the graph below to evaluate (◦ ).



**First, find from the graph:**

**Now, evaluate function "" at , that is, find from the graph:**

**Therefore, (◦ ).**

10. Determine if and are inverses of each other.

**The functions are inverses of each other if and only if and .**

**(**◦ **)**

**and**

**(**◦ **)**

**Therefore, the given functions are inverses of each other.**