Cornell Notes

Name Rachel Moulton | Date 10-3-2011

Topic Alg II Functions | Class/Suject Bonn Per 1

7:50 finish group quiz from friday

Unit Test on Thursday!

8:10 Group Activity — Function Composition Activity
work with partner
Everyone given separate function
Follow directions on handout
Turn in after done with round 3

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8:50

HOMEWORK: Successive Discounts worksheet #1-3 (Bring to class all week)
Inverse Functions worksheet

Unit Test on Thursday

Cornell Notes

Name

Date

Topic

Class/
Suject

Classwork/Groupwork

Name ____________________

Function Composition Activity

Your Team's Function is:

$T_{\_}(x) =$ ____________

Round 1

Together with the class, compute each of the following.

$T_1(T_2(T_3(T_4(2))))$

$T_5(T_6(T_7(T_8(-3))))$

Round 2

As instructed, team up with another group and let f and g represent your two groups' functions.

Write down the formulas you'll be using for this round:

$f(x) =$ ____________ $g(x) =$ ____________

Evaluate each of the following with the help of the other team.

$f(5)$ $g(f(2))$ $f(g(f(g(2))))$

$g(3)$ $g(g(0))$ $f(g(x))$

$f(g(-1))$ $f(f(7.5))$ $g(f(x))$

Round 3

As in round 2, team up with a different group and let f and g represent your two groups' functions.

Write down the formulas you'll be using for this round:

$f(x) =$ ____________ $g(x) =$ ____________

Evaluate each of the following with the help of the other team.

$f(5)$ $g(f(2))$ $f(g(f(g(2))))$

$g(3)$ $g(g(0))$ $f(g(x))$

$f(g(-1))$ $f(f(7.5))$ $g(f(x))$

Round 4

As a class, find formulas for each of the following chains of functions.

HINT: You can check a composition formula by performing the composition with a specific number. If your formula matches the composition for the number, then it's probably correct.

$$T_5(T_1(x))$$

$$T_2(T_7(x))$$

$$T_1(T_2(T_3(T_4(x))))$$

$$T_5(T_6(T_7(T_8(x))))$$

$$T_1(T_2(T_3(T_4(T_5(T_6(T_7(T_8(x))))))))$$

Use your formulas to compute the following directly:

$$T_2(T_7(100))$$

$$T_1(T_2(T_3(T_4(0))))$$

$$T_1(T_2(T_3(T_4(T_5(T_6(T_7(T_8(-4))))))))$$

True or False? Explain.

It is usually true that, for a number x and functions f and g, $f(g(x)) = g(f(x))$

HW 6-5

Algebra 2 Name:____________________

Inverse Functions Worksheet Period:_____

Make sure to show all your work on this worksheet. Enjoy the math!

Use the definition of inverse functions and composition of functions for the following problems.

1. Determine if $f(x) = 6 - 2x$ and $g(x) = \frac{6-x}{2}$ are inverse functions.

2. Determine if $f(x) = 4 - x$ and $g(x) = x + 4$ are inverse functions.

3. How do you tell if an equation is NOT a function?

Find the inverse of each function and determine whether or not the inverse is a function.

4. $f(x) = x + 3$

To find the inverse function:

Step 1: Solve the function for the independent variable (x).

Step 2: Determine if you have a unique solution. If the solution is unique the inverse will be a function.

Step 3: Now switch x and y to write the inverse.

Step 4: Denote inverse as y^{-1} or $f^{-1}(x)$

Algebra 2 Name:______________________

Inverse Functions Worksheet Period:______

5. $f(x) = x^2 - 4x + 4$

6. $g(x) = \frac{2}{3}x - \frac{1}{4}$

7. $f(x) = \frac{x-7}{2}$

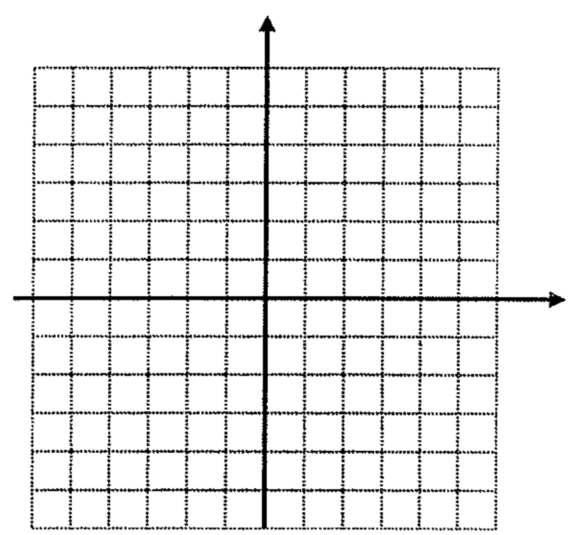
Find the inverse of each function and determine whether or not the inverse is a function.

Step 1: Interchange the domain and range.
Step 2: Look at new domain values to determine if it is a function.

8. {(5, 1), (1, 8), (-1, 4)}

9. {(-5, 1), (2, -8), (-3, 5), (0, 1)}

10. Graph $y = x^2 - 3$ function and its inverse using the tools you used in class.



Successive Discounts

NAME ______________________________

Composition of functions involves applying two or more functions in succession.

One of the places that this topic occurs is in retail stores, when successive discounts are taken. Using this context, you will examine composition of functions.

In the mail, you receive a coupon for $5 off of a pair of jeans. When you arrive at the store, you find that all jeans are 25% off. You find a pair of jeans for $36.

1. If you use the $5 off coupon first, and then you use the 25% off on the remaining amount, how much will the jeans cost?

2. If you use the 25% off first, and then you use the $5 off on the remaining amount, how much will the jeans cost?

How will the situation change for jeans that cost more or less than $36?

3. Let the cost of the jeans be represented by a variable x. Write a function $f(x)$ that represents the cost of the jeans after the $5 off coupon.

4. Write a function $g(x)$ that represents the cost of the jeans after the 25% discount.

5. Write a new function $r(x)$ that represents the cost of the jeans if the 25% discount is applied first and the $5 off coupon is applied second.

6. Write a new function $s(x)$ that represents the cost of the jeans if the $5 off coupon is applied first and the 25% discount is applied second.

Examine a graphical representation of the situation.

7. Using the context of the cost of a pair of jeans, determine a reasonable domain for the problem situation.

8. Use your domain to determine an appropriate viewing window for the graphs of $y_1 = f(x)$ and $y_2 = g(x)$. Record the dimensions of your viewing window below.

9. Graph $y_1 = f(x)$ and $y_2 = g(x)$. Notice that their graphs intersect. Identify the point of intersection. Explain the meaning of the point of intersection as related to the cost of the jeans.

Graph equivalent functions.

10. Graph $y_3 = r(x)$. Explain how the graph of $y_3 = r(x)$ relates to the graphs of $y_1 = f(x)$ and $y_2 = g(x)$.

11. Using only y_1 and y_2, determine a function equivalent to $y_3 = r(x)$. Graph this function in the same viewing window as $y_1 = f(x)$, $y_2 = g(x)$, and $y_3 = r(x)$. Explain how you can use a graph to determine if your function is equivalent to $y_3 = r(x)$.

12. Graph $y_4 = s(x)$. Explain how the graph of $y_4 = s(x)$ relates to the graphs of $y_1 = f(x)$ and $y_2 = g(x)$.

13. Using only y_1 and y_2, determine a function equivalent to $y_4 = s(x)$. Graph this function in the same viewing window as $y_1 = f(x)$, $y_2 = g(x)$, and $y_4 = s(x)$. Explain how you can use a graph to determine if your function is equivalent to $y_4 = s(x)$.

14. If you want to pay the lowest possible sale price, should you apply the coupon first or the percent discount first? Discuss how you can use the graphs of $y_3 = r(x)$ and $y_4 = s(x)$ to support your answer.