October 23, 2018, Tuesday

Rewrite the following in slope intercept form (y = mx + b).

1) $3x - 4y = 0$

2) $x + y = -5$

3) $-x + y - 1 = 0$

4) $0 = 1 + y - \frac{1}{3}x$

Oct 16-2:33 PM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice

Name: ______ Date: ______

Day 1 – Combining Like Terms

Conditions for Combining Like Terms:

1) The terms must have the same ______.

2) Variables must have the same ______.

Simplify each expression:

1. $-5n - 2 - 6$

2. $8 - 6x + 1 + 3x$

3. $5x - 2(4 + 8x)$

4. $7(r + 2) + 8r$

5. $2(3b - 6) - 2$

6. $6b(1 + 3b) - 2(-4b - 3)$

7. $-7x(-7x + 1) + x(1 - 3x)$

8. $-2y(-4y + 5) - 5(2 - 3y)$

9. $5x(y - 8) ...$

10. $... + 5(x + 5)$

Oct 19-8:57 AM

What Can You Say About a Monster with Five Legs?

Tools for Algebra: Using the Distributive Property

Simplify the expression. Write the letter of the exercise in the box that contains the number of the answer.

E $7x + 6 + 2x + 5$

I $5x + 5y + x + 8y$

S $3x + 4y + 10 + 12x + y + 1$

O $8x + 30y + 75x + 16y + 4x$

A $\frac{1}{3}x + \frac{2}{3}x + 9x$

I $x + \frac{1}{2}x + 4 + 4x$

6 $10x$
3 $15x + 5y + 11$
10 $15x + 3y + 12$
22 $9x + 11$
20 $\frac{11}{2}x + 4$
28 $87x + 46y$
12 $6x + 13y$
18 $\frac{15}{2}x + 4$

I $6a^2 + 11a + 3a^2$

T $2a^2 + 5a + a^2 + 5a + 9$

A $4a^2 + 7b^2 + 3a^2 + 18$

L $3a^2 + 8ab + b^2 + 6a^2 + 7b^2$

H $5(a^2 + 4) + 2(a^2 + b^2)$

M $9(a^2 + b) + 4(a + b)$

8 $3a^2 + 10a + 9$
17 $9a^2 + 4a + 13b$
2 $9a^2 + 11a$
14 $7a^2 + 4b^2 + 18$
19 $9a^2 + 8ab + 8b^2$
23 $9a^2 + 3a + 11b$
24 $7a^2 + 7b^2 + 18$
1 $7a^2 + 2b^2 + 20$

T $5(n + 2) + 8n + 1$

S $n + 4(n + 9) + 20$

G $7 + 2(3 + n) + 11n$

I $3(n + 8) + 8(n + 10)$

E $9 + 2(15 + n) + 7(n + 5)$

H $16(n + 1) + 4n + 6(5 + n)$

16 $11n + 104$
4 $9n + 46$
9 $5n + 56$
15 $26n + 46$
26 $13n + 13$
25 $26n + 104$
13 $13n + 11$
30 $9n + 74$

P $2(5t + 8) + 9(2t + 1)$

K $1 + 7(4 + 3t) + 5(12 + t)$

V $4(6t + 5) + 9t + 3(4t + 7)$

N $t(t + 8) + 5(t^2 + 6)$

F $6(6t^2 + 7t) + 2(5t + 16) + 8t^2$

L $3t^2 + t(4t + w) + 8tw + w^2$

23 $7t^2 + 8tw + 2w^2$
11 $44t^2 + 52t + 32$
21 $26t + 89$
27 $7t^2 + 9tw + w^2$
10 $44t^2 + 8t + 30$
29 $45t + 41$
5 $28t + 25$
7 $6t^2 + 8t + 30$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

HIS PANTS FIT HIM LIKE a GLOVE.

PRE-ALGEBRA WITH PIZZAZZ! © Creative Publications / Algebra • Book A, Mathworks

Oct 19-8:57 AM

October 23, 2018, Tuesday

Simplify each expression.

1) $-4p - 1 + 10$

2) $10(x + 10)$

3) $-8(10 + 3k) + 10$

4) $-3(-1 - a) + 2(8 - 6a)$

Oct 16-2:36 PM

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Practice

Name: ______ Date: ______

Day 2 – Function Notation and Evaluating Functions (Graphs)

Decide whether the graph represents y as a function of x. Explain your reasoning.

1. 2. 3.

Decide whether the relation is a function. If it is a function, give the domain and the range.

4. Input Output

5. Input Output

6.

Input	Output
0	-6
2	-4
4	-2
6	0

Evaluate the function when x = 3, x = 0, and x = −2.

7. $f(x) = 2x - 5$

8. $h(x) = -6x + 2$

9. $g(x) = 2.4x$

10. $f(x) = 0.5x + 12$

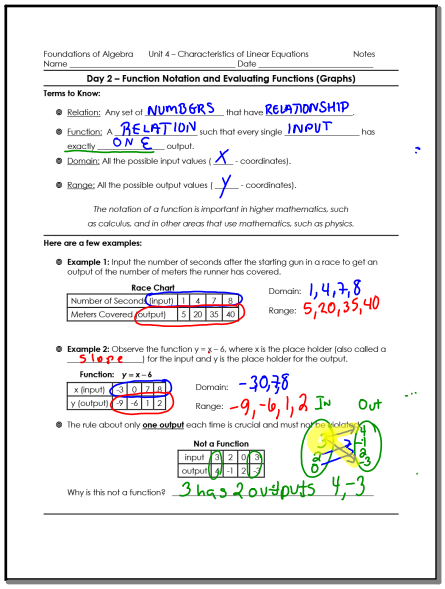
11. $h(x) = \frac{2}{3}x - 1$

12. $f(x) = \frac{3}{5}x + 2$

Oct 16-2:35 PM

October 24, 2018, Wednesday

Oct 24-1:32 PM


Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes
Name _____ Date _____

Day 2 – Function Notation and Evaluating Functions (Graphs)

Terms to Know:

- Relation: Any set of NUMBERS that have RELATIONSHIP
- Function: A RELATION such that every single INPUT has exactly ONE output.
- Domain: All the possible input values (X - coordinates).
- Range: All the possible output values (Y - coordinates).

The notation of a function is important in higher mathematics, such as calculus, and in other areas that use mathematics, such as physics.

Here are a few examples:

- **Example 1:** Input the number of seconds after the starting gun in a race to get an output of the number of meters the runner has covered.

Race Chart

Number of Seconds (input)	1	4	7	8
Meters Covered (output)	5	20	35	40

Domain: 1, 4, 7, 8
Range: 5, 20, 35, 40

- **Example 2:** Observe the function y = x – 6, where x is the place holder (also called a slope) for the input and y is the place holder for the output.

Function: y = x – 6

x (input)	-3	0	2	8
y (output)	-9	-6	-1	2

Domain: -3, 0, 8
Range: -9, -6, -1, 2

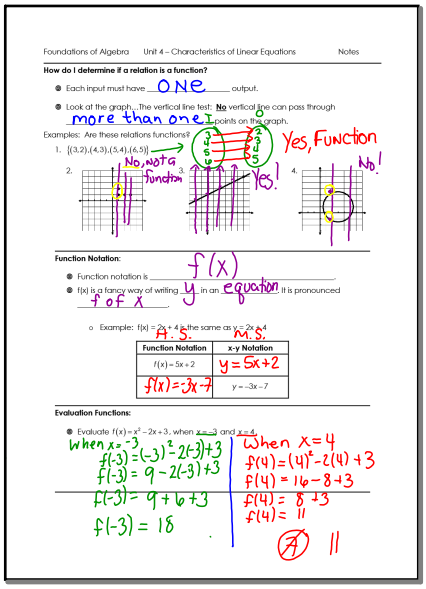
In Out

- The rule about only one output each time is crucial and must not be violated.

Not a Function

input	-3	2	0	-3
output	4	-1	2	7

Why is this not a function? 3 has 2 outputs 4, -3


Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes

How do I determine if a relation is a function?

- Each input must have ONE output.
- Look at the graph. The vertical line test: No vertical line can pass through more than one points on the graph.

Examples: Are these relations functions?

1. {(3,2),(4,3),(5,4),(6,5)} No, not a function
2. Yes, Function
3. Yes!
4. No!

Function Notation:

- Function notation is f(x)
- f(x) is a fancy way of writing y in an equation. It is pronounced f of x.
  - Example: f(x) = 2x + 4 is the same as y = 2x + 4

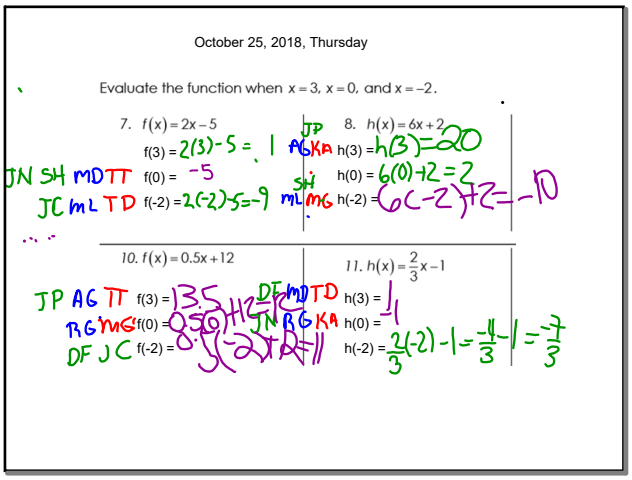
Function Notation	x-y Notation
f(x) = 5x + 2	y = 5x + 2
f(x) = 3x - 7	y = -3x - 7

Evaluation Functions:

- Evaluate f(x) = x² – 2x + 3, when x = -3 and x = 4

When x = -3
f(-3) = (-3)² – 2(-3) + 3
f(-3) = 9 – 2(-3) + 3
f(-3) = 9 + 6 + 3
f(-3) = 18

When x = 4
f(4) = (4)² – 2(4) + 3
f(4) = 16 – 8 + 3
f(4) = 8 + 3
f(4) = 11


October 25, 2018, Thursday

Evaluate the function when x = 3, x = 0, and x = –2.

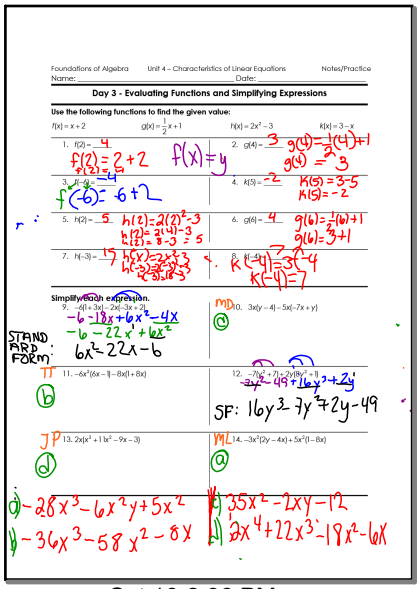
7. f(x) = 2x – 5
f(3) = 2(3) – 5 = 1
f(0) = -5
f(-2) = 2(-2) – 5 = -9

8. h(x) = 6x + 2
h(3) = h(3) = 20
h(0) = 6(0) + 2 = 2
h(-2) = 6(-2) + 2 = -10

10. f(x) = 0.5x + 12
f(3) = 13.5
f(0) = 0.5(0) + 12 = 12
f(-2) = 0.5(-2) + 12 = 11

11. h(x) = (2/3)x – 1
h(3) = 1
h(0) = -1
h(-2) = (2/3)(-2) – 1 = -4/3 – 1 = -7/3

Oct 16-2:38 PM


Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice
Name: Date:

Day 3 - Evaluating Functions and Simplifying Expressions

Use the following functions to find the given value:

f(x) = x + 2 g(x) = (1/3)x + 1 h(x) = 2x² – 3 k(x) = 3 – x

1. f(2) = 4
2. g(4) = 3
3. f(-6) = -4
4. k(5) = -2
5. h(2) = 5
6. g(6) = 4
7. h(-3) = 15
8. k(-4) = 7

Simplify each expression.

9. –6(1 + 3x) – 2x(–3x + 2)
10. 3x(y – 4) – 5x(–7x + y)
11. –6x²(6x – 1) – 8x(1 + 8x)
12. –7(x² + 7) – 2y(6y² – y + 2y)
13. 2x(x³ + 1 – 2x² – 9x – 3)
14. –3x²(2y – 4x) + 5x²(1 – 8x)

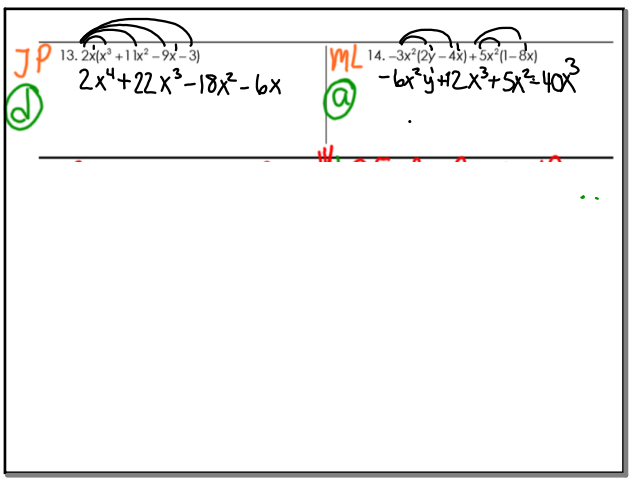
STANDARD FORM:
9. –6 – 18x + 6x² – 4x
–6 – 22x + 6x²
6x² – 22x – 6

12. –7x² – 49 + 14y² + 2y
SF: 14y² – 7y² + 2y – 49

13. a) –28x³ – 6x²y + 5x²
b) –36x³ – 58x² – 8x

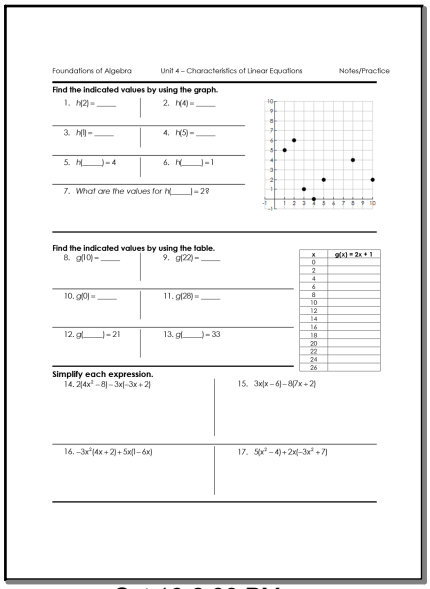
14. a) 35x² – 12xy – 12
b) 2x⁴ + 22x³ – 18x² – 6x

Oct 16-2:36 PM


JP 13. 2x(x³ + 1 – 2x² – 9x – 3)
d) 2x⁴ + 22x³ – 18x² – 6x

ML 14. –3x²(2y – 4x) + 5x²(1 – 8x)
a) –6x²y + 12x³ + 5x² – 40x³

Oct 25-9:36 AM


Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice

Find the indicated values by using the graph.

1. h(2) = ____
2. h(4) = ____
3. h(1) = ____
4. h(5) = ____
5. h(____) = 4
6. h(____) = 1
7. What are the values for h(____) = 2?

Find the indicated values by using the table.

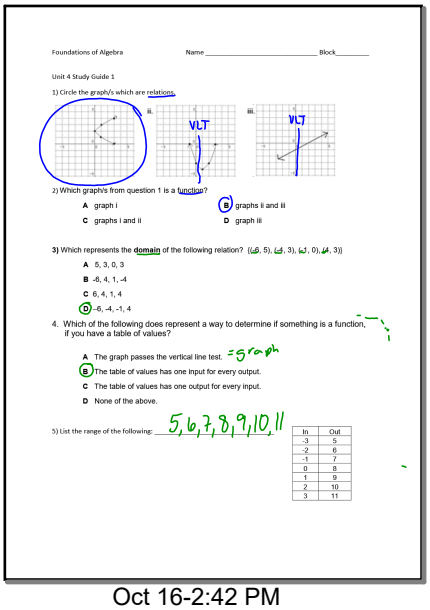
x	g(x) = 2x + 1
0	
2	
4	
6	
8	
10	
12	
14	
16	
18	
20	
22	
24	
26	

8. g(10) = ____
9. g(22) = ____
10. g(0) = ____
11. g(28) = ____
12. g(____) = 21
13. g(____) = 33

Simplify each expression.

14. 2(4x² – 8) – 3x(–3x + 2)
15. 3x(x – 6) – 8(7x + 2)
16. –3x²(4x + 2) + 5x(1 – 6x)
17. 5(x² – 4) + 2x(–3x² + 7)

Oct 16-2:38 PM


Foundations of Algebra Name _____ Block_____

Unit 4 Study Guide 1

1) Circle the graph/s which are relations.

ii. VLT iii. VLT

2) Which graph/s from question 1 is a function?

A graph i B graphs ii and iii

C graphs i and ii D graph iii

3) Which represents the domain of the following relation? $(\frac{1}{2}, 5), (\frac{1}{4}, 3), (\frac{1}{3}, 0), (\frac{1}{4}, 3))$

A 5, 3, 0, 3

B -8, 4, 1, -4

C 6, 4, 1, 4

D -5, -4, -1, 4

4. Which of the following does represent a way to determine if something is a function, if you have a table of values?

A The graph passes the vertical line test. = graph

B The table of values has one input for every output.

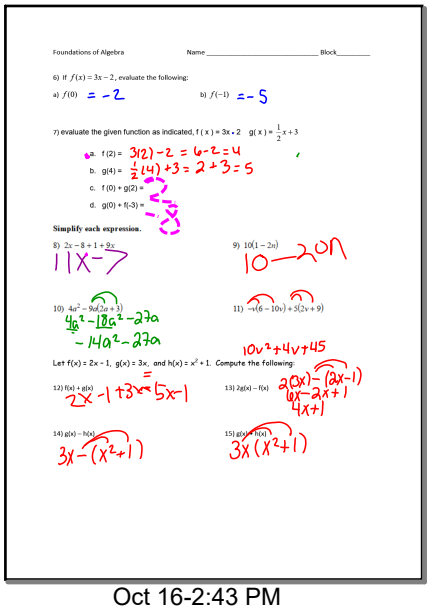
C The table of values has one output for every input.

D None of the above.

5) List the range of the following: 5, 6, 7, 8, 9, 10, 11

In	Out
-3	5
-2	6
-1	7
0	8
1	9
2	10
3	11

Oct 16-2:42 PM


Foundations of Algebra Name _____ Block_____

6) If $f(x) = 3x - 2$, evaluate the following:

a) $f(0) = -2$ b) $f(-1) = -5$

7) evaluate the given function as indicated, $f(x) = 3x - 2$ $g(x) = \frac{1}{2}x + 3$

a. $f(2) = 3(2) - 2 = 6 - 2 = 4$

b. $g(4) = \frac{1}{2}(4) + 3 = 2 + 3 = 5$

c. $f(0) + g(2) =$

d. $g(0) + f(-3) =$

Simplify each expression.

8) $2x - 8 + 1 + 9x$ $11x - 7$

9) $10(1 - 2n)$ $10 - 20n$

10) $4a^2 - 9a(2a + 3)$ $4a^2 - 18a^2 - 27a$ $-14a^2 - 27a$

11) $-2(6 - 10v) + 5(2v + 9)$ $10v^2 + 4v + 45$

Let $f(x) = 2x - 1$, $g(x) = 3x$, and $h(x) = x^2 + 1$. Compute the following:

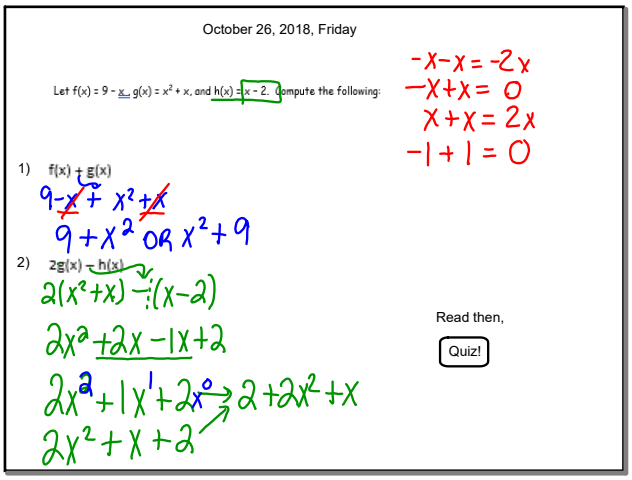
12) $f(x) + g(x)$ $2x - 1 + 3x = 5x - 1$

13) $2g(x) - f(x)$ $2(3x) - (2x - 1)$ $6x - 2x + 1$ $4x + 1$

14) $g(x) - h(x)$ $3x - (x^2 + 1)$

15) $g(x) \cdot h(x)$ $3x(x^2 + 1)$

Oct 16-2:43 PM


October 26, 2018, Friday

Let $f(x) = 9 - x$, $g(x) = x^2 + x$, and $h(x) = x - 2$. Compute the following:

$-x - x = -2x$

$-x + x = 0$

$x + x = 2x$

$-1 + 1 = 0$

1) $f(x) + g(x)$

$9 - x + x^2 + x$

$9 + x^2$ OR $x^2 + 9$

2) $2g(x) - h(x)$

$2(x^2 + x) - (x - 2)$

$2x^2 + 2x - 1x + 2$

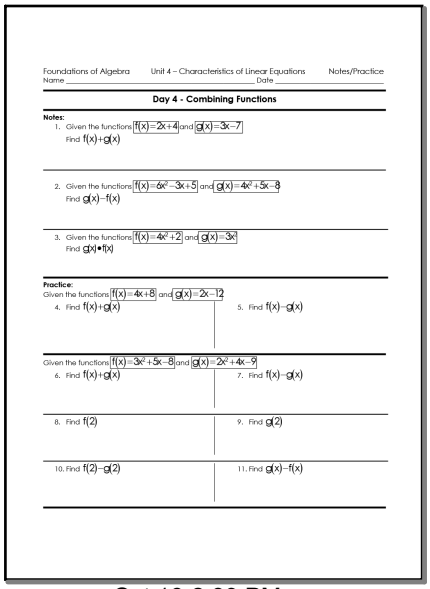
$2x^2 + 1x^1 + 2x^0 \rightarrow 2 + 2x^2 + x$

$2x^2 + x + 2$

Read then,

Quiz!

Oct 16-2:41 PM


Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice

Name _____ Date _____

Day 4 - Combining Functions

Notes:

1. Given the functions $f(x) = 2x + 4$ and $g(x) = 3x - 7$
   Find $f(x) + g(x)$

2. Given the functions $f(x) = 6x^2 - 3x + 5$ and $g(x) = 4x^2 + 5x - 8$
   Find $g(x) - f(x)$

3. Given the functions $f(x) = 4x^2 + 2$ and $g(x) = 3x$
   Find $g(x) \cdot f(x)$

Practice:

Given the functions $f(x) = 4x + 8$ and $g(x) = 2x - 12$

4. Find $f(x) + g(x)$
5. Find $f(x) - g(x)$

Given the functions $f(x) = 3x^2 + 5x - 8$ and $g(x) = 2x^2 + 4x - 9$

6. Find $f(x) + g(x)$
7. Find $f(x) - g(x)$
8. Find $f(2)$
9. Find $g(2)$
10. Find $f(2) - g(2)$
11. Find $g(x) - f(x)$

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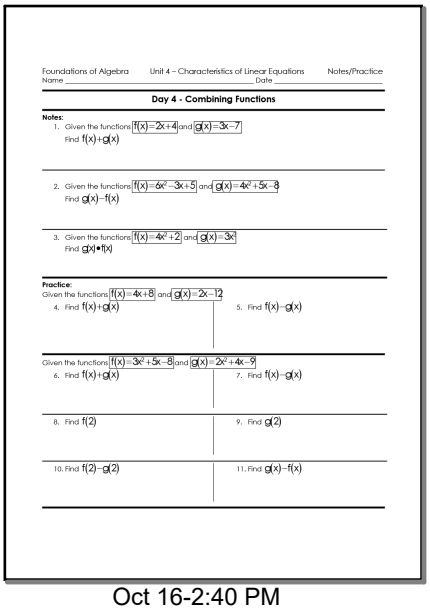

Foundations of Algebra Unit 4 – Characteristics of Linear Equations Notes/Practice

Name _____ Date _____

Day 4 - Combining Functions

Notes:

1. Given the functions $f(x) = 2x + 4$ and $g(x) = 3x - 7$
   Find $f(x) + g(x)$

2. Given the functions $f(x) = 6x^2 - 3x + 5$ and $g(x) = 4x^2 + 5x - 8$
   Find $g(x) - f(x)$

3. Given the functions $f(x) = 4x^2 + 2$ and $g(x) = 3x$
   Find $g(x) \cdot f(x)$

Practice:

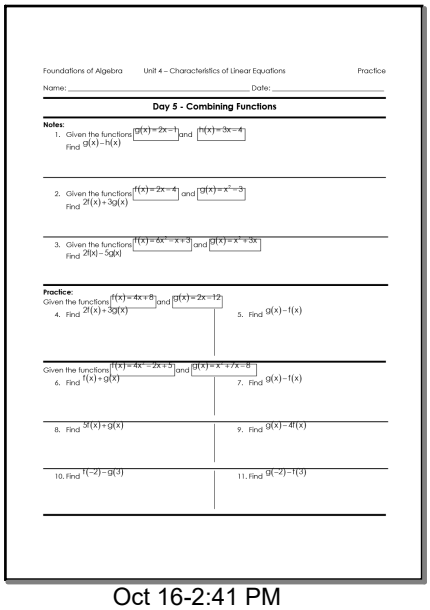
Given the functions $f(x) = 4x + 8$ and $g(x) = 2x - 12$

4. Find $f(x) + g(x)$
5. Find $f(x) - g(x)$

Given the functions $f(x) = 3x^2 + 5x - 8$ and $g(x) = 2x^2 + 4x - 9$

6. Find $f(x) + g(x)$
7. Find $f(x) - g(x)$
8. Find $f(2)$
9. Find $g(2)$
10. Find $f(2) - g(2)$
11. Find $g(x) - f(x)$

Oct 16-2:40 PM


Foundations of Algebra Unit 4 – Characteristics of Linear Equations Practice

Name: _____ Date: _____

Day 5 - Combining Functions

Notes:

1. Given the functions $g(x) = 2x - 1$ and $h(x) = 3x - 4$
   Find $g(x) - h(x)$

2. Given the functions $f(x) = 2x - 4$ and $g(x) = x^2 - 3$
   Find $2f(x) + 3g(x)$

3. Given the functions $f(x) = 6x^2 - x + 3$ and $g(x) = x^2 + 3x$
   Find $2f(x) - 5g(x)$

Practice:

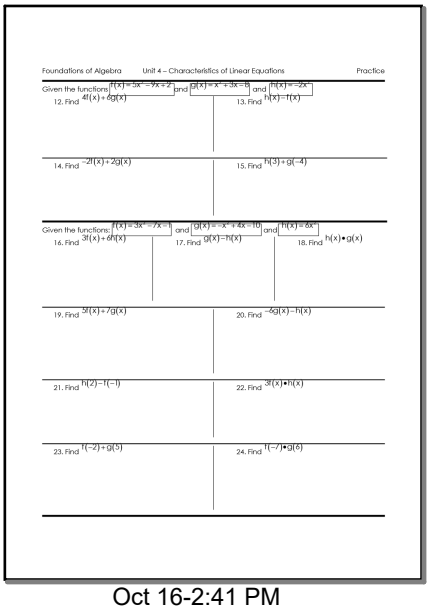
Given the functions $f(x) = 4x + 8$ and $g(x) = 2x - 12$

4. Find $2f(x) + 3g(x)$
5. Find $g(x) - f(x)$

Given the functions $f(x) = 4x - 2x + 3$ and $g(x) = x^2 + 7x - 8$

6. Find $f(x) + g(x)$
7. Find $g(x) - f(x)$
8. Find $3f(x) + g(x)$
9. Find $g(x) - 4f(x)$
10. Find $f(-2) - g(3)$
11. Find $g(-2) - f(3)$

Oct 16-2:41 PM



Foundations of Algebra Unit 4 – Characteristics of Linear Equations Practice

Given the functions $f(x)=5x^2-9x+2$ and $g(x)=x^2+3x-8$ and $h(x)=-2x$

12. Find $3f(x)+6g(x)$

13. Find $h(x)-f(x)$

14. Find $-2f(x)+2g(x)$

15. Find $h(3)+g(-4)$

Given the functions $f(x)=3x^2-7x-1$ and $g(x)=-x^2+4x-10$ and $h(x)=6x$

16. Find $3f(x)+6h(x)$

17. Find $g(x)-h(x)$

18. Find $h(x)\bullet g(x)$

19. Find $5f(x)+7g(x)$

20. Find $-6g(x)-h(x)$

21. Find $h(2)-f(-1)$

22. Find $3f(x)\bullet h(x)$

23. Find $f(-2)+g(5)$

24. Find $f(-7)\bullet g(6)$

Oct 16-2:41 PM