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Today's Agenda

- Warm-Up   ** please put homework on your desk

- **Quiz on Systems by Graphing**

- Section 3.3 - Solving Systems by Elimination
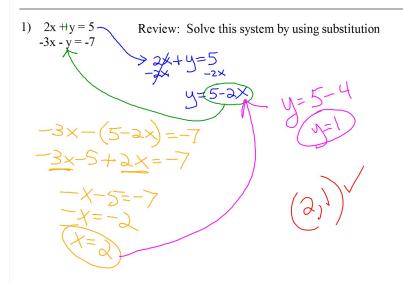
- Practice Problems

- Classwork / Homework

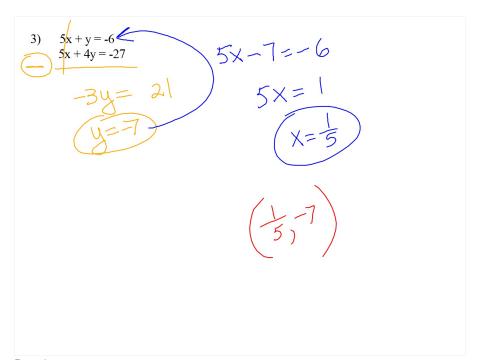## Page 2

Section 3.3 - Solving Systems by Linear Combination

_____

1) $2x + y = 5$
   $-3x - y = -7$ Review: Solve this system by using substitution

$2x + y = 5$
$-2x \quad -2x$

$y = 5 - 2x$

$-3x - (5 - 2x) = -7$
$-3x - 5 + 2x = -7$
$-x - 5 = -7$
$-x = -2$
$x = 2$

$y = 5 - 4$
$y = 1$

$(2, 1)$ ✓

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Solving Systems using Linear Combination

2) $2x + y = 5$
    $-3x - y = -7$

$(+)$

$4 + y = 5$
$y = 1$

$-x = -2$
$x = 2$

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3) $5x + y = -6$
    $5x + 4y = -27$

$(-)$

$-3y = 21$
$y = -7$

$5x - 7 = -6$
$5x = 1$
$x = \frac{1}{5}$

$\left(\frac{1}{5}, -7\right)$

4) $(x - 4y = 5) \cdot 2 \longrightarrow 2x - 8y = 10$
   $2x + y = 1$

$2x + y = 1$

$\ominus$ _____

$-9y = 9$

$y = -1$

$2x - 1 = 1$

$2x = 2$

$x = 1$

$(1, -1)$

5) $(2x - 3y = 6) \cdot 2 \longrightarrow 4x - 6y = 12$
   $4x - 5y = 8$

$4x - 5y = 8$

$\ominus$

$-y = 4$

$y = -4$

$2x - 3(-4) = 6$

$2x + 12 = 6$

$2x = -6$

$x = -3$

$(-3, -4)$

6) $(-3x + 2y = 7) \cdot 3 \longrightarrow -9x + 6y = 21$
   $(5x + 3y = 1) \cdot 2 \longrightarrow 10x + 6y = 2$

$\ominus$ _____

$-19x = 19$

$x = -1$

$-3(-1) + 2y = 7$

$3 + 2y = 7$

$2y = 4$

$y = 2$

$(-1, 2) \checkmark$

7) $(3x - 2y = 2) \cdot 4 \longrightarrow 12x - 8y = 8$
   $(4x - 3y = 1) \cdot 3 \longrightarrow 12x - 9y = 3$

$\ominus$ _____

$y = 5$

$4x - 15 = 1$

$4x = 16$

$x = 4$

$(4, 5)$

8) $(2x - y = 4) \cdot 2$
$4x - 2y = 8$

$4X - 2y = 8$
$4X - 2y = 8$

Infinitely many

9) $-4x + 8y = -12$
$(2x - 4y = 7) \cdot 2$

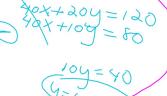$-4X + 8y = -12$
$4X - 8y = 14$

$(+)$

$0 = 2$

No solution

Catering A customer hires a caterer to prepare food for a party of 30 people. The customer has $80 to spend on food and would like there to be a choice of sandwiches and pasta. A $40 pan of pasta contains 10 servings, and a $10 sandwich tray contains 5 servings. The caterer must prepare enough food so that each person receives one serving of either food. How many pans of pasta and how many sandwich trays should the caterer prepare?

$(10X + 5y = 30) \cdot 4$
$40X + 10y = 80$

$X = $ pans of pasta
$y = $ sandwich trays

$40X + 20y = 120$
$40X + 10y = 80$
$(-)$

$10y = 40$
$y = 4$ sand.

$10X + 20 = 30$
$10X = 10$
$X = 1$ pasta

Multiple Choice Which ordered pair is a solution of the system of equations?
$$3x + 2y = 2$$
$$6x + 5y = -1$$

Ⓐ $(4, -5)$ 　Ⓑ $(-5, 4)$ 　Ⓒ $(-4, 5)$ 　Ⓓ $(5, -4)$

Multiple Choice Which ordered pair is a solution of the system of equations?
$$5x + 6y = 1$$
$$2x + 5y = 16$$

Ⓕ $(7, 6)$ 　Ⓖ $(-7, 6)$ 　Ⓗ $(6, -7)$ 　Ⓙ no solution

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Using Addition Solve the system using the linear combination method. Then check your solution.

8. $x + y = -1$
$\quad x - y = 9$

9. $x - y = 7$
$\quad 2x + y = 5$

10. $x + 2y = -11$
$\quad 3x - 2y = -1$

Using Multiplication and Addition Solve the system using the linear combination method. Then check your solution.

14. $3x - y = 4$
$\quad 2x + 3y = 32$

15. $4x - 3y = 10$
$\quad x + 2y = -14$

16. $2x + 2y = -16$
$\quad 2x + 3y = -3$

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