Verifying a Solution for a Linear System

Recall:

> The solution to an equation is the value which makes the equation true.

A linear system is two or more linear relations. The solution to a linear system is the point (x,y) that satisfies all linear relations. Graphically, this is the point where the straight lines intersect, or cross each other.

To verify a solution, we check our work in another way to show that the point (x,y) satisfies all of the linear relations in the linear system.

solve graphically

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To verify or check a solution (x,y):

(1) Pick an equation to verify.
(2) Isolate the left side (LS) and right side (RS) of the equation.
(3) Substitute the x- and y-values from the solution into the left side.
(4) Substitute into the right side.
(5) Compare the LS and RS.
(6) Repeat for every equation in the linear system.

If the LS = RS for every equation, the solution is valid.

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Ex. Verify that (-1, 2) is a solution to the system

x y

$y = 3x + 5$ ①

$x + y = 1$ ②

pick equation
isolate LS RS
sub (x,y) in LS RS
compare LS RS
repeat

$y = 3x + 5$

$LS = y \quad RS = 3x + 5$

$LS = 2 \quad RS = 3(-1) + 5$

$RS = -3 + 5$

$RS = 2$

$LS = RS$ ✓

$x + y = 1$

$LS = x + y \quad RS = 1$

$LS = (-1) + (2)$

$LS = 1$

$LS = RS$ ✓

$\therefore (-1, 2)$ is a solution.

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Ex.1. Solve y = 3x - 2 and x = y - 2.

The solution is (2, 4), or x = 2 and y = 4.

y = 3x - 2

x = y - 2

pick equation
isolate LS RS
sub (x,y) in LS RS
compare LS RS
repeat

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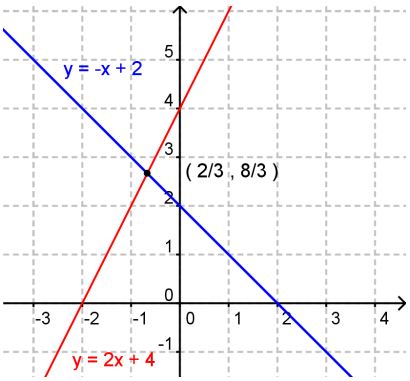
$y = 2x + 4$

$y = 2 - x$

solution: $\left(\frac{-2}{3}, \frac{8}{3}\right)$



pick equation
isolate LS RS
sub (x,y) in LS RS
compare LS RS
repeat

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Assigned Work:

p. 26 # 1ab, 2, 3ab, 5abf, 10, 18*

then

Watch Tomorrow's Lesson
(Solving by Substitution)

hw

3 (a) $x+y=5$ ① $3x+4y=12$ ②

① : $y=-x+5$

$y=mx+b$

x-int, set $y=0$

$3x=12$

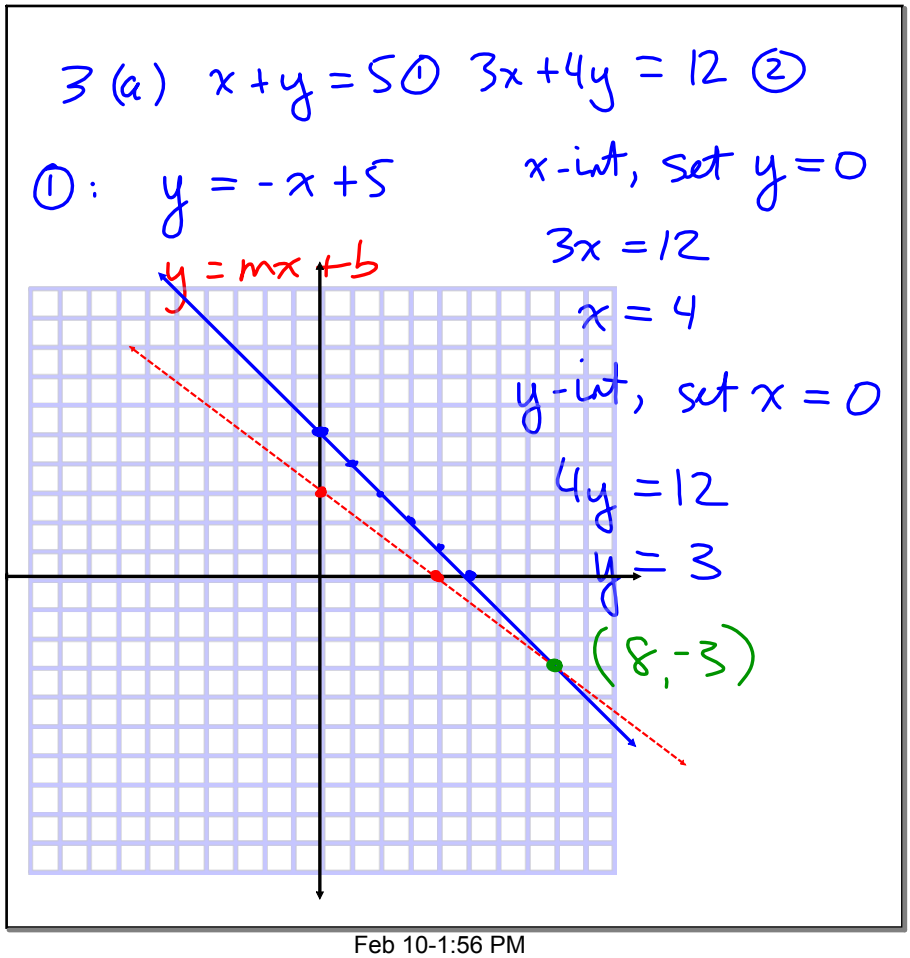
$x=4$

y-int, set $x=0$

$4y=12$

$y=3$

$(4,-3)$



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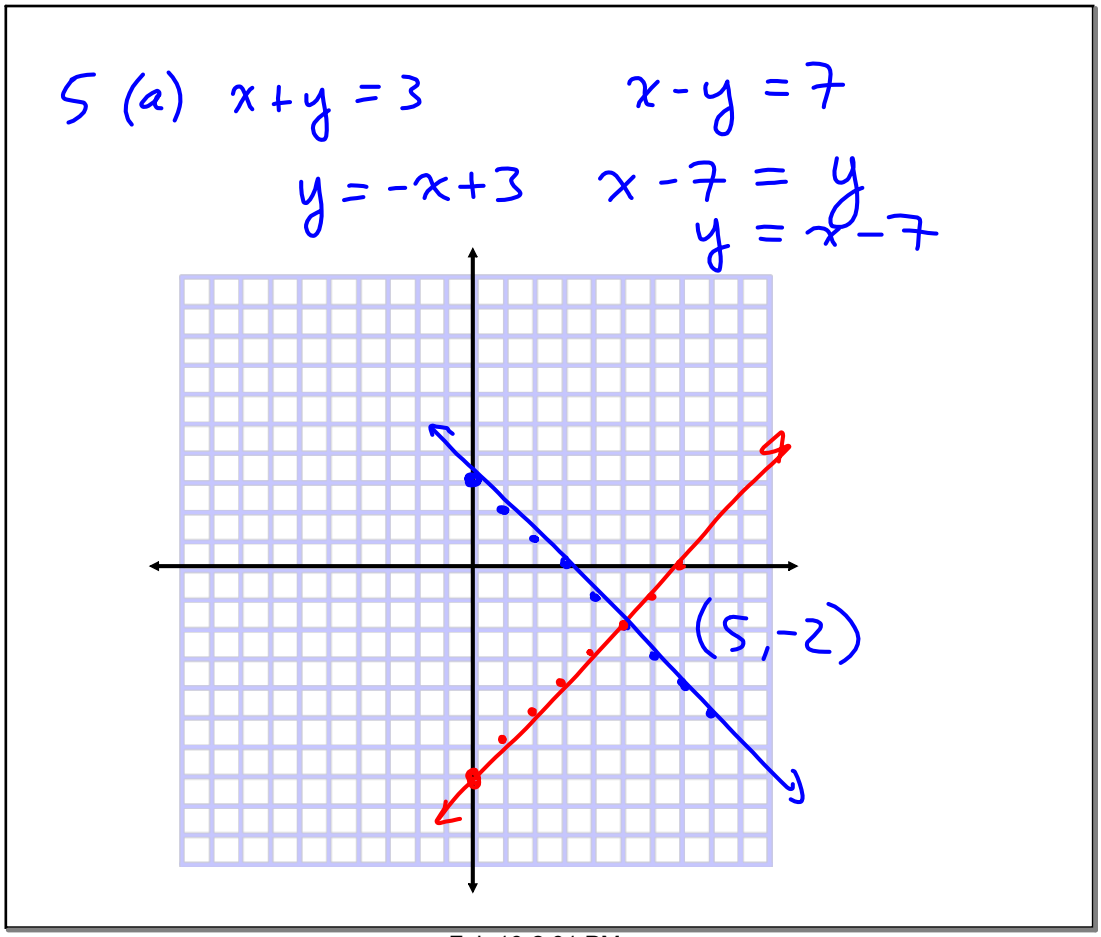
5 (a) $x+y=3$ $x-y=7$

$y=-x+3$ $x-7=y$

$y=x-7$

$(5,-2)$



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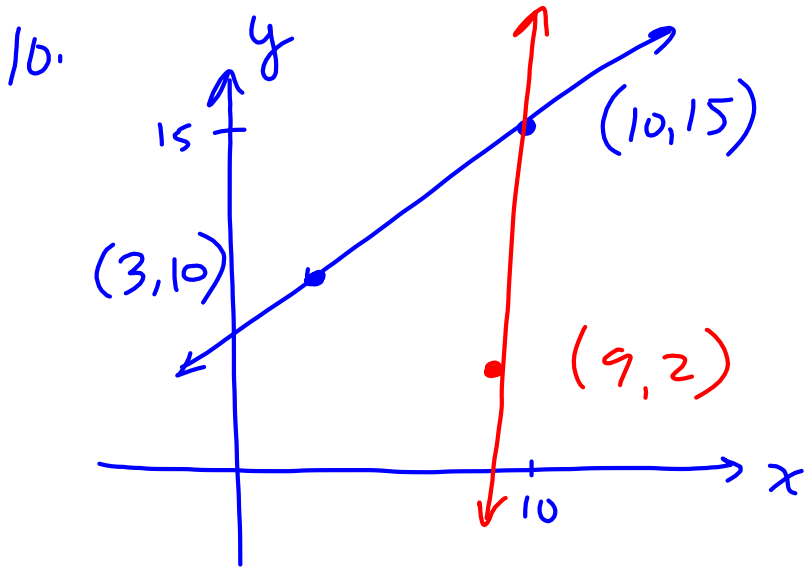
10.



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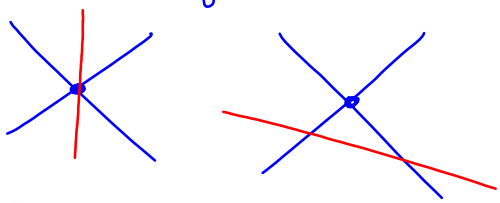
18. 3 equations

need 2 equations for POI.



① solve 2 equations → solution A
(1 pair)
Solve another pair → solution B

OR

② solve 1 pair → solution A
Verify solution A in Eq. ③

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Attachments

Basic 2D Grid.agg