

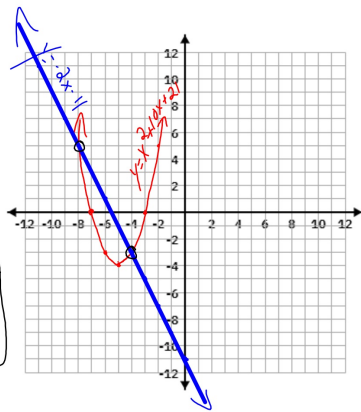
Do Now: Solve the system on the CW

1. $y = x^2 + 10x + 21$

$y = -2x - 11$

x	y
-8	5
-7	0
-6	-3
-5	-4
-4	-3
-3	0
-2	5

$m = -\frac{2}{1}$
 $b = -11$
 $(-8, 5), (-4, 3)$



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8.10 Solving System of equations algebraically

Procedure:

1. Substitute one variable in terms of (using) the other
2. Put into standard form (a is positive, eliminate fractions)
least common denominator
3. Factor and solve for x
4. Find matching y values
5. Write solution(s), as an ordered pair
6. Check

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Solve the system of equations algebraically

1. $y = x^2 + 10x + 21$

$y = -2x - 11$

$-2x - 11 = x^2 + 10x + 21$
 $0 = x^2 + 10x + 21 + 2x + 11$

$0 = x^2 + 12x + 32$
 $x^2 + 12x + 32 = 0$

$(x + 8)(x + 4) = 0$

$x + 8 = 0$ or $x + 4 = 0$

$x = -8$ or $x = -4$

$y = -2x - 11$

$y = -2(-8) - 11$

$y = 16 - 11$

$y = 5$

$(-8, 5)$

$y = -2(-4) - 11$

$y = 8 - 11$

$y = -3$

$(-4, -3)$

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2. $y = -x^2 + 6x - 5$

$x - 5 = -x^2 + 6x - 5$ (a has to be positive)

$x - 5 + x^2 - 6x + 5 = 0$

$x^2 - 5x = 0$

$x(x - 5) = 0$

$x = 0$ or $x - 5 = 0$

$x = 5$

$y = x - 5$

$y = 0 - 5$

$y = -5$

$(0, -5)$

$y = x - 5$

$y = 5 - 5$

$y = 0$

$(5, 0)$

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3. $y^2 + x^2 = 10$

$x + y = 4$

$y = 4 - x$

$(4 - x)^2 + x^2 = 10$

$(4 - x)(4 - x) + x^2 = 10$

$(16 - 4x - 4x + x^2) + x^2 = 10$

$(16 - 8x + x^2) + x^2 = 10$

$16 - 8x + x^2 + x^2 = 10$

$2x^2 - 8x + 16 = 10$

$2x^2 - 8x + 16 - 10 = 0$

$2x^2 - 8x + 6 = 0$

$2(x^2 - 4x + 3) = 0$

$2(x - 3)(x - 1) = 0$

$2 \neq 0$ $x - 3 = 0$ or $x - 1 = 0$

$x = 3$ or $x = 1$

$x + y = 4$

$3 + y = 4$

$y = 4 - 3$

$y = 1$

$(3, 1)$

$x + y = 4$

$1 + y = 4$

$y = 4 - 1$

$y = 3$

$(1, 3)$

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