12.1 Graphing Systems of Equations

You graph both(all) equations on the same coordinate axes. The point of intersection is the "solution" to the system.

Most of the time there will be exactly one point of intersection. This is calles an "independent" system of equations.

If the lines are parallel, there will be no intersection and this system has no solution and is called "inconsistent"

If the lines overlap because they have the same slope and same y intercept (they are the same line) then there are infinite "solutions" and this system is called dependent

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12.2Graphing systems of inequalities

any point in the region where the shaded parts overlap solves both equations and is a solution to the system.

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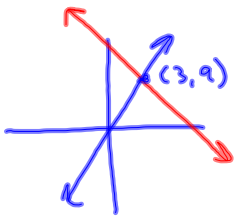
12.3 Solving systems algebraically - The Substitution method

$y = 3x$
$x + y = 12$

$x + 3x = 12$
$4x = 12$
$x = 3$
$(3, \ )$

$y = 3(3)$
$y = 9$
$(3, 9)$



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$2x + 3y = 7$
$3x - y = 5$ $\Rightarrow$ $-y = -3x + 5$
$y = 3x - 5$ ①

② $2x + 3(3x - 5) = 7$
$2x + 9x - 15 = 7$
$11x - 15 = 7$
$11x = 22$
$x = 2$
$(2, \ )$

③ $3x - y = 5$
$3(2) - y = 5$
$6 - y = 5$
$-y = -1$
$y = 1$
$(2, 1)$

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p337 #1

$y = 2x$
$x + y = 12$

① $y = 2x$

② $x + 2x = 12$
$3x = 12$
$x = 4$
$(4, \ )$

$x + y = 12$
$4 + y = 12$
$y = 8$
$(4, 8)$

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p337 #2

$x + y = 8$
$y = x - 2$

$x + (x - 2) = 8$
$2x - 2 = 8$
$2x = 10$
$x = 5$
$(5, \ )$

$y = 5 - 2$
$y = 3$
$(5, 3)$

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p337 #12

$5x-7y=-3$
$3x+y=19$

① $3x+y=19$
$y=-3x+19$

② $5x-7(-3x+19)=-3$
$5x+21x-133=-3$
$26x=130$
$x=5$
$(5, \ )$

③ $3(5)+y=19$
$15+y=19$
$y=4$
$(5,4)$

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12.4 Problem Solving

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12.5 Solving systems algebraically - The Addition method

$5x-2y=30$
$+ \ x+2y=6$
$6x \quad =36$
$x=6$
$(6, \ )$

$x+2y=6$
$6+2y=6$
$2y=0$
$y=0$
$(6,0)$

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$2x=-9y+24$
$-2x+5y=4$

$5y=-9y+28$
$14y=28$
$y=2$

$2x=-9(2)+24$
$2x=6$
$x=3$

$(3,2)$

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12.6 Solving systems algebraically - The Multiplication-addition method

$3(4x-y=7)$
$5x+3y=13$

$12x-3y=21$
$5x+3y=13$
$17x \quad =34$
$x=2$

$4(2)-y=7$
$8-y=7$
$-y=-1$
$y=1$
$(2,1)$

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p346 #2

$2(6x-2y=6)$
$x+4y=14$

$12x-4y=12$
$x+4y=14$
$13x \quad =26$
$x=2$

$2+4y=14$
$4y=12$
$y=3$
$(2,3)$

$6x-2y=6$
$-6(x+4y=14)$

$-6x-24y=-84$
$6x-2y=6$
$-26y=-78$
$y=3$

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$7(5x-2y=8)$
$2(2x+7y=11)$

don't forget this side !!!

$35x-14y=56$
$4x+14y=22$
$39x = 78$
$x=2$

$2(2)+7y=11$
$4+7y=11$
$7y=7$
$y=1$ $(2,1)$

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12.7 Coin and Mixture problems

12.8 Digit problems

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Chapter 12 Homework
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