Topic: Graphing Systems of Inequalities

Question: Why does this matter in real life?

Homework Correction

7. $2x + 3y = 5$ **consistent,**
$-6x - 9y = -15$ **dependent**

8. $x - 2y = 4$ **consistent,**
$y = x - 2$ **independent**

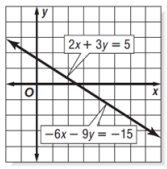
9. $y = 0.5x$ **inconsistent**
$2y = x + 4$

10. $9x - 5 = 7y$ **consistent,**
$4.5x - 3.5y = 2.5$ **dependent**

11. $\frac{3}{4}x - y = 0$ **consistent,**
$\frac{1}{3}y + \frac{1}{2}x = 6$ **independent**

12. $\frac{2}{3}x = \frac{5}{3}y$ **consistent,**
$2x - 5y = 0$ **dependent**

7.



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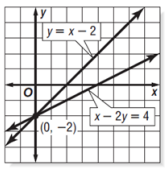

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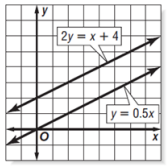

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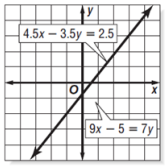

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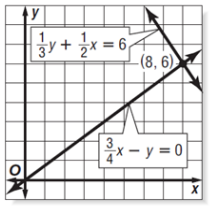

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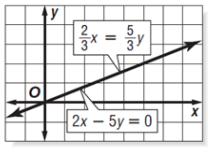


Solve each system of equations by using substitution.

1. $2x + 3y = 10$
$x + 6y = 32$ **(−4, 6)**

2. $x = 4y - 10$
$5x + 3y = -4$ **(−2, 2)**

3. $3x - 4y = -27$
$2x + y = -7$ **(−5, 3)**

Solve each system of equations by using elimination.

4. $7x + y = 9$
$5x - y = 15$ **(2, −5)**

5. $r + 5s = -17$
$2r - 6s = -2$ **(−7, −2)**

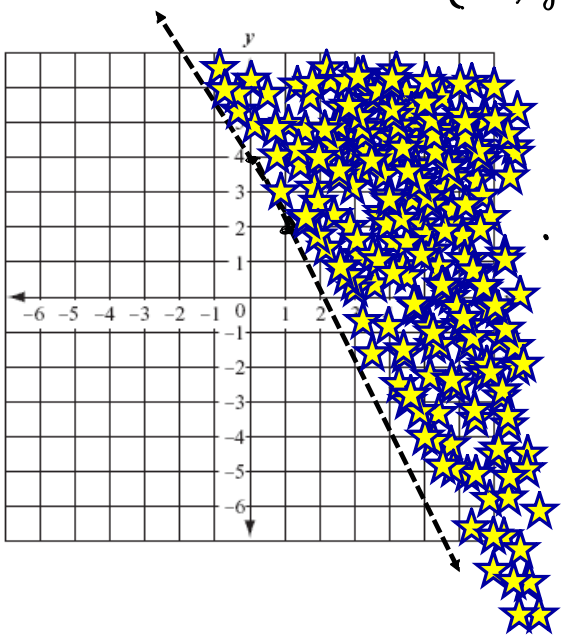
6. $6p + 8q = 20$
$5p - 4q = -26$ **(−2, 4)**

Solve each system of equations by using either substitution or elimination.

7. $2x - 3y = 7$
$3x + 6y = 42$ **(8, 3)**

8. $2a + 5b = -13$
$3a - 4b = 38$ **(6, −5)**

9. $3c + 4d = -1$
$6c - 2d = 3$ $\left(\frac{1}{3}, -\frac{1}{2}\right)$



(x, y)

$y > -2x + 4$

y-intercept

m (slope)

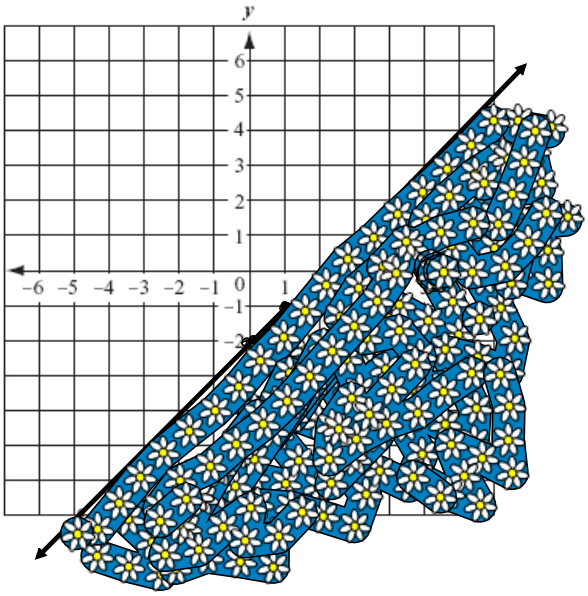
$\frac{\text{rise}}{\text{run}}$

(3, 4) Martha's test point

$4 > -2(3) + 4$

$4 > -6 + 4$

$4 > -2$



$y \leq x - 2$ $1 = \frac{1}{1}$

$y \leq 1x - 2$

(1,1) Michael's unhelpful test point

(2,-3) Michael's helpful test point

$-3 \leq 2 - 2$

$-3 \leq 0$

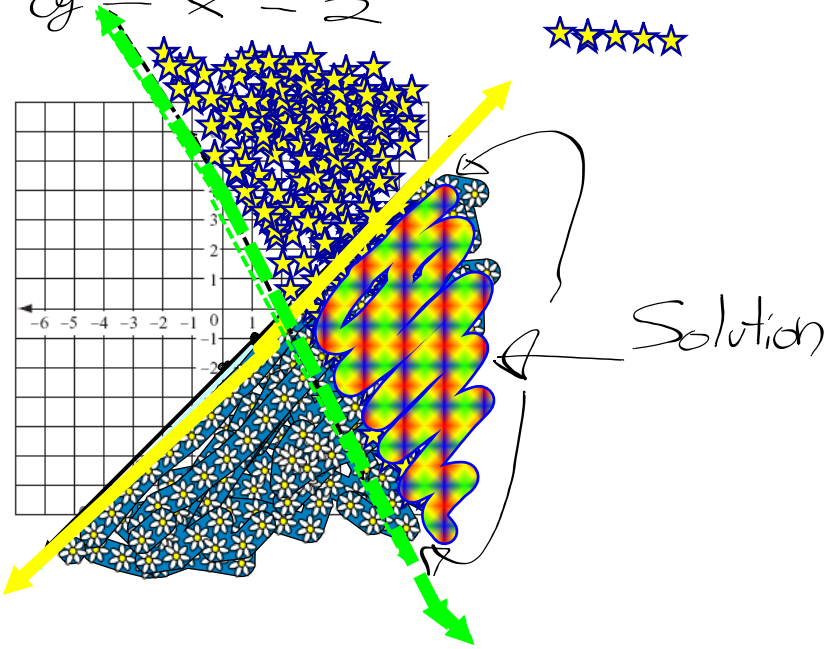
✓

Notes. Graphing a system of inequalities

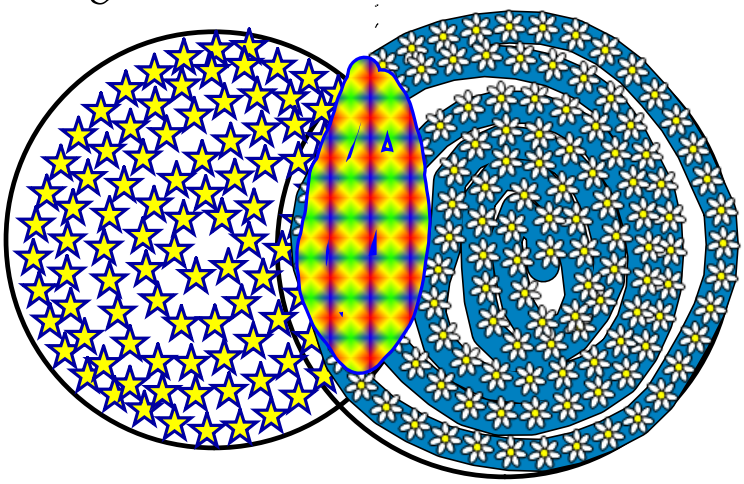
when you have 2 or more inequalities w/ the same variables

Ex. $y \geq -2x + 4$

$y \leq x - 2$



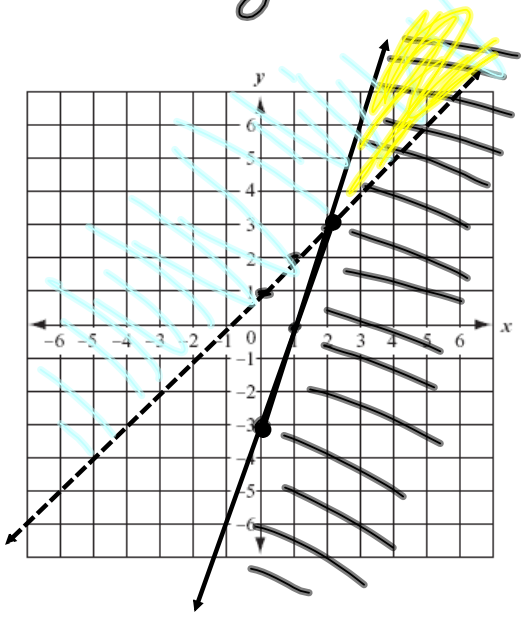
$y > -2x+4$ $y \leq x-2$



Graph

$y \leq 3x-3$

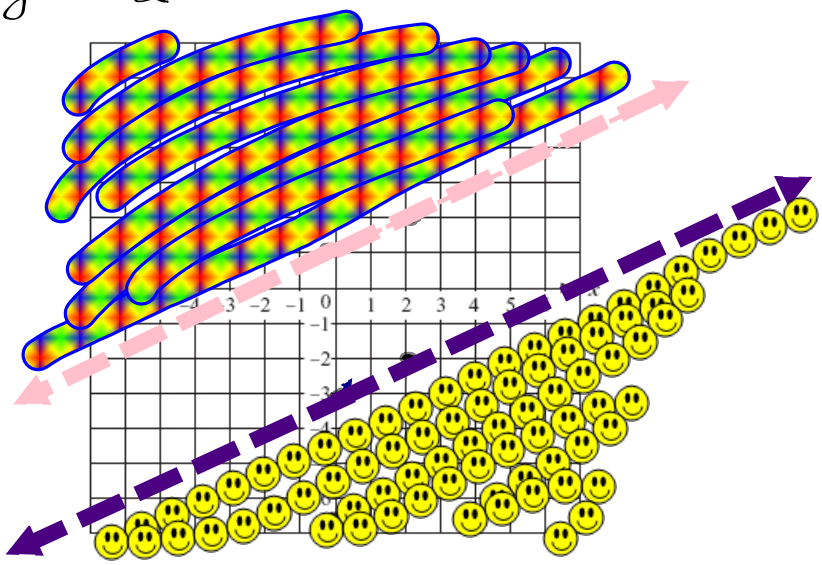
$y > x+1$



Example #3 Graph the system of inequalities

$y > \frac{1}{2}x + 1$

$y < \frac{1}{2}x - 3$



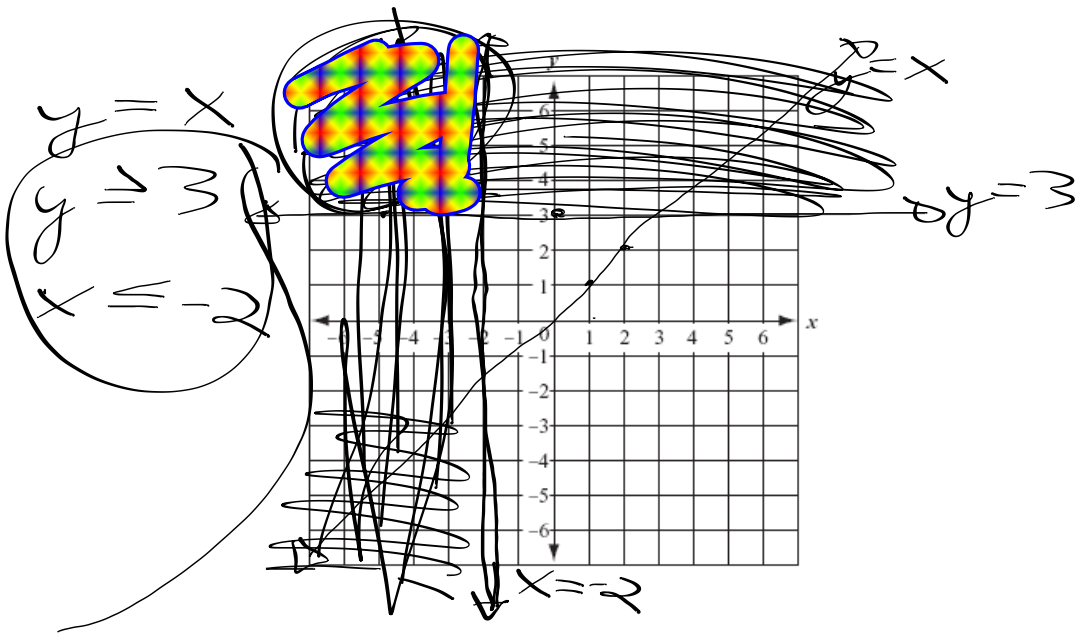
Homework

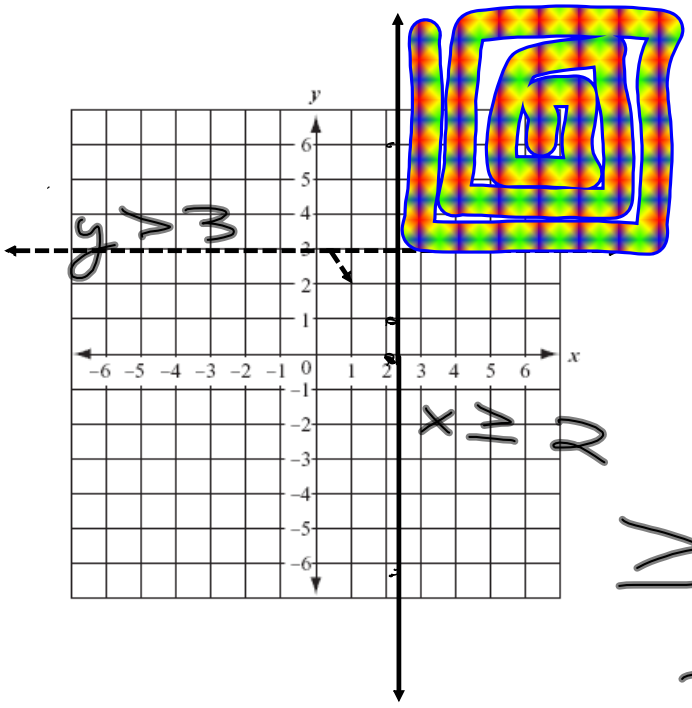
p126-127

#12-17 all

42-54 all

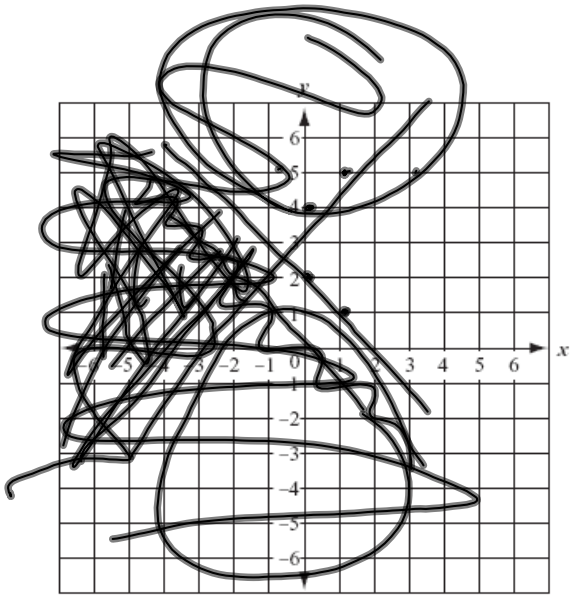
summary see #39





12.)
$x \geq 2$
$y > 3$

$\geq \leq$ solid
$<$ dotted
$=$ equal



Solving by Elimination

$2.5x + 1.5y = -2$

$3(3.5x - 0.5y = 18)$ → $10.5x - 1.5y = 54$

$+$

$2.5x + 1.5y = -2$

$13x = 52$

$x = 4$

$2.5(4) + 1.5y = -2$

$10 + 1.5y = -2$

$\frac{1.5y}{1.5} = \frac{-12}{1.5}$

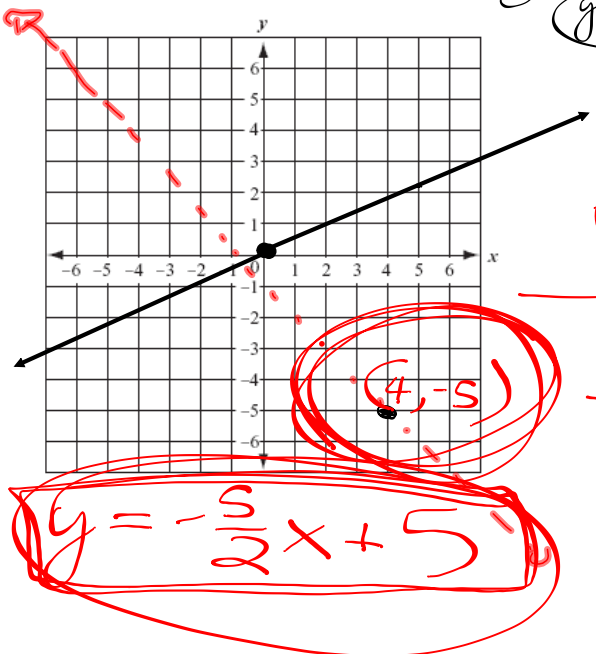
$y = -8$

Graph the line that passes through (4, -5) and is perpendicular to the line $-2x + 5y = 1$

$+2x \quad +2x$

$5y = 2x + 1$

$y = \frac{2}{5}x + \frac{1}{5}$



$m \cdot m = -1$

$\frac{2}{5}\left(-\frac{5}{2}\right) = -1$

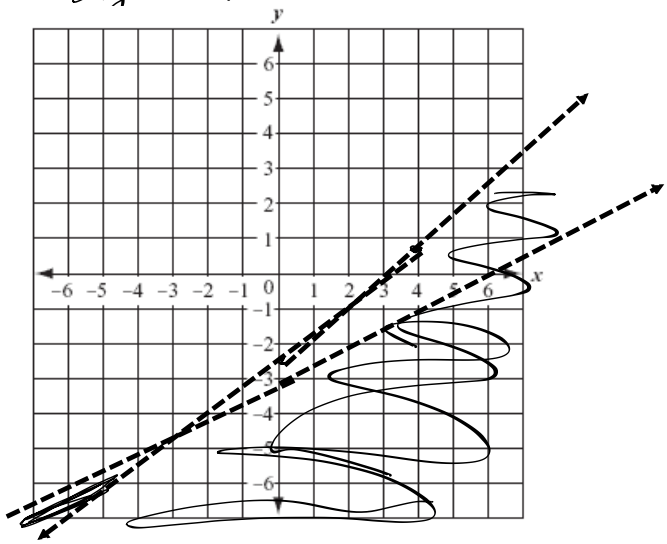
$y = mx + b$

$-5 = -\frac{5}{2}(4) + b$

$5 = b$

$y = -\frac{5}{2}x + 5$

Graph system of inequalities

$4x - 3y < 7$ → $y < \frac{3}{4}x - \frac{7}{3}$

$2y - x < -6$ → $y < \frac{1}{2}x - 3$