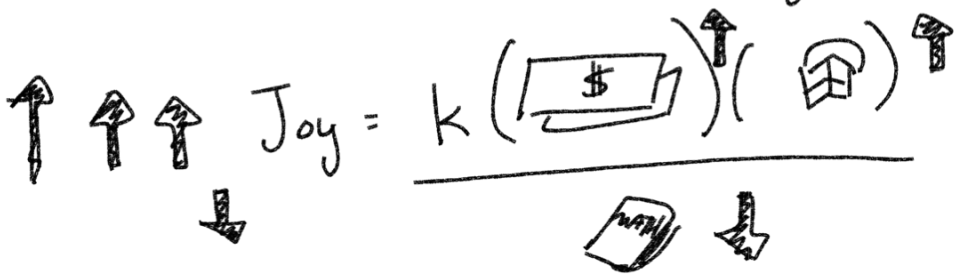
W-A2 Algebra 2 Week 16

Joy vary directly with money and cake
and vary inversely with math

$$\text{Joy} = k\,\frac{\text{"directly"}}{\text{"inversely"}}$$



$y = 9 \quad x = -3$

$y = ? \quad x = 4$

$y = kx$

$9 = k(-3)$

$9 = -3k$

Systems of Equations

Substitution → isolate one of the variables

$\{ x - 4y = -2 \}$

$4x - 4y = -20$

$x - 4y = -2$
$+4y \quad +4y$

$x = 4y - 2$

substitute

$4(4y - 2) - 4y = -20$

$16y - 8 - 4y = -20$

$12y - 8 = -20$
$+8 \quad +8$

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

$y = -1$

$y = -1$

$x - 4y = -2$

$x - 4(-1) = -2$

$x + 4 = -2$
$-4 \quad -4$

$x = -6$

$(-6, -1)$

$-5x + 4y = 20$

$15x + 9y = -45$

$3(-5x + 4y = 20)$

$15x + 9y = -45$

$-15x + 12y = 60$

$15x + 9y = -45$

$21y = 15$

$\frac{21y}{21} = \frac{15}{21}$

Cancel $\overset{1}{\cancel{x}}$ $\overset{1}{\cancel{y}}$

$y = \frac{15 \div 3}{21 \div 3} = \frac{5}{7} = 0.714285\overline{71}$...

$-5x + 4\left(\frac{5}{7}\right) = 20$

$-5x + \frac{20}{7} = 20$

$-\frac{20}{7}$ $-\frac{20}{7}$

$\frac{7 \cdot 20}{7 \cdot 1} = \frac{140}{7}$

$-5x = 20 - \frac{20}{7}$

$-5x = \frac{140}{7} - \frac{20}{7}$

$-\frac{1}{5}(-5x) = \frac{120}{7}\left(-\frac{1}{5}\right)$

$x = \frac{\overset{24}{\cancel{120}}}{7}\left(-\frac{1}{\cancel{5}}\right) = \frac{-24}{7}$

$\left(-\frac{24}{7}, \frac{5}{7}\right)$

$6x - 4y = -24$

$-2(9x - 2y = 18)$

$6x - 4y = -24$

$-18x + 4y = -36$

$\frac{-12x}{-12} = \frac{-60}{-12}$

$x = 5$

$6x - 4y = -24$

$6(5) - 4y = -24$

$30 - 4y = -24$

$-30 \quad -30$

$\frac{-4y}{-4} = \frac{-54}{-4}$

$y = \frac{27}{2} = 13.5$

3-3 Solving Systems of Inequalities

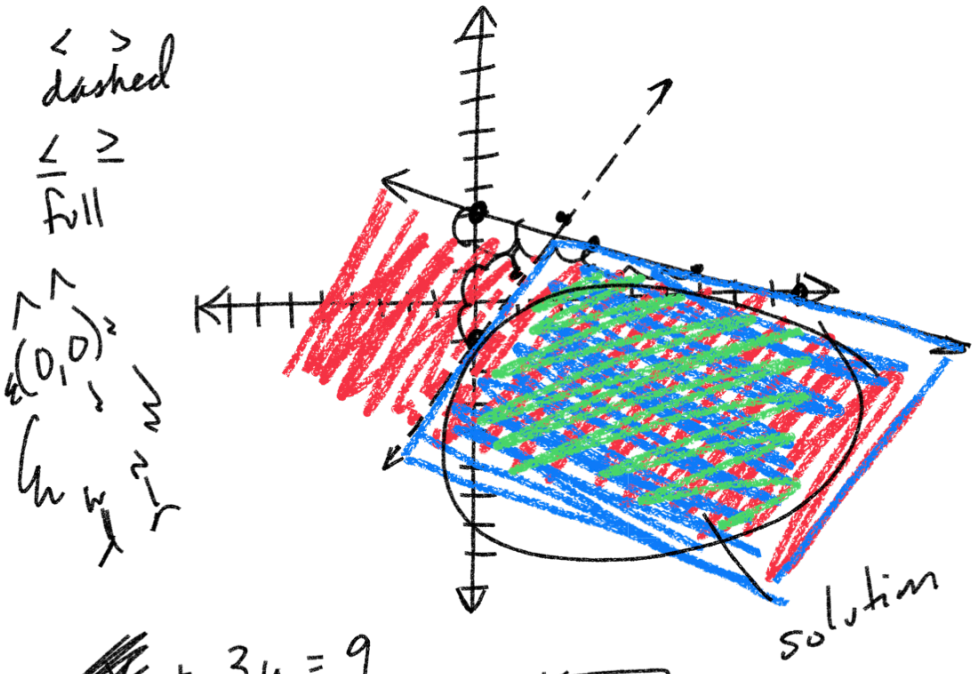
$\{x + 3y \leq 9\}$

$\{2x - y > 1\}$

< > dashed

≤ ≥ full

(0,0)



$x + 3y = 9$

$-x \quad -x$

$\frac{3y}{3} = \frac{-x}{3} + \frac{9}{3}$

$\{y = -\frac{1}{3}x + 3\}$

$\frac{3y}{3} = \frac{9}{3}$

$y = 3$ (0,3)

$x = 0$

$x + 3y = 9$

$y = 0 \quad x = 9$ (9,0)

$2x - y = 1$

$-2x \quad -2x$

$-y = -2x + 1$

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

$y = 2x - 1$

$x + 3y \leq 9$

$0 \leq 9$ (0,0)

$2x - y > 1$

$2(0) - 0 > 1$ false

$0 > 1$

(0,0)

$0 \geq 3(0) + 1$

$0 \geq 1$

false

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

$y \geq 3x + 1$

Solution

(0,0)

$0 < -\frac{1}{3}(0) - 1$

$0 < -1$ false

HW
Ch 3.3 evens
Supplemental WS
Online HW 16 & Feb 3rd
Quiz 16

→ HW/Quiz 14 due tonight
HW/Quiz 15 due Jan 27th