GEOMETRY CLASS NOTES TUES 9-26-12

(16) $\begin{cases} 7x + 3y = 4 \\ 3x + y = 4 \end{cases}$

System of Linear Equations

SOLVE BY GRAPHING

$7x + 3y = 4$

$\frac{3y}{3} = \frac{-7x}{3} + \frac{4}{3}$

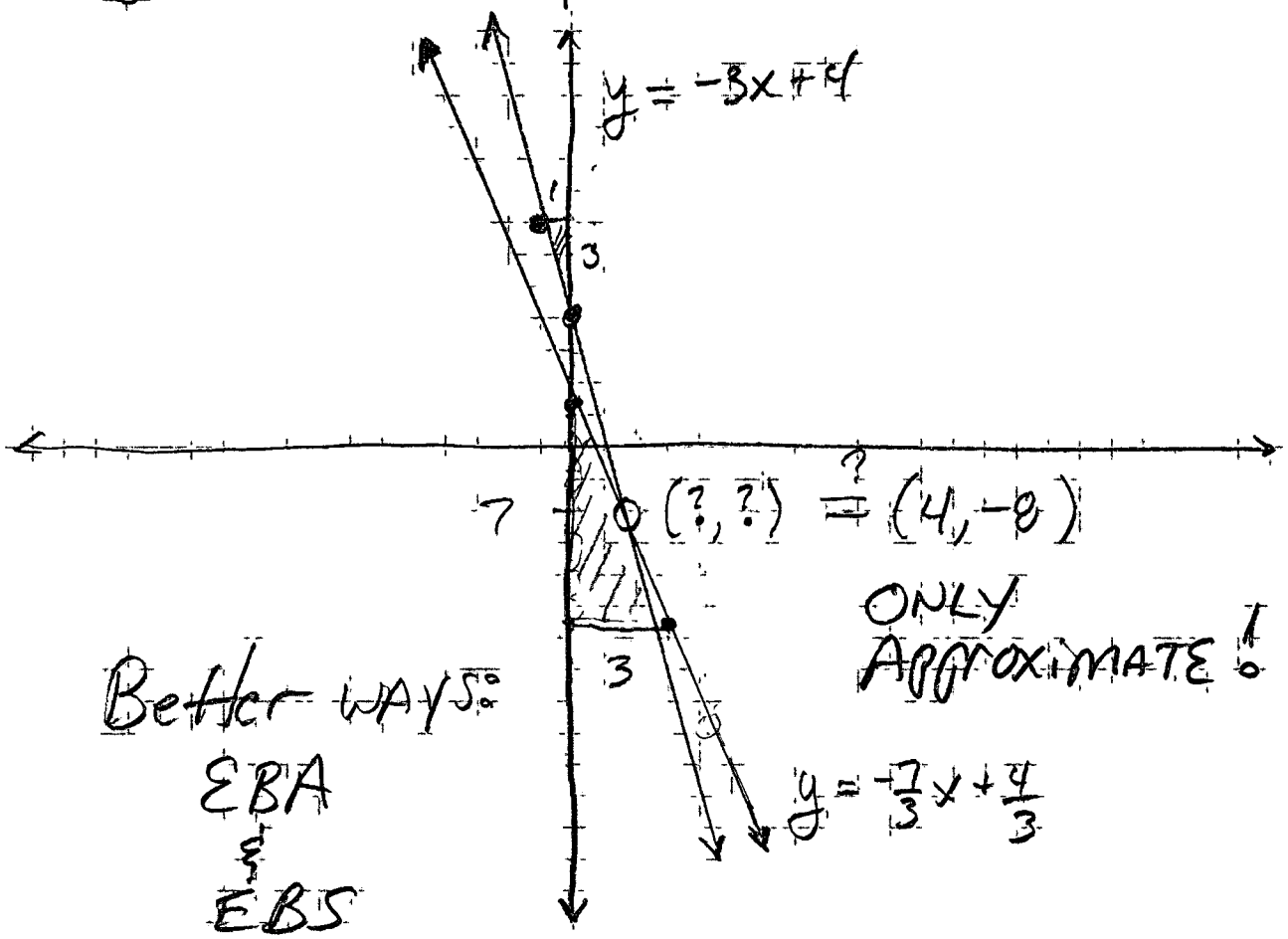
SI $y = -\frac{7}{3}x + \frac{4}{3}$

$y = mx + b$

$3x + y = 4$

$y = -3x + 4$ SI

$y = mx + b$



ONLY APPROXIMATE!

Better ways:

EBA

&

EBS

EBA

$$7x + 3y = 4$$
$$3x + y = 4$$

Steps
① Get x, y, # lined up
② 2 choices, X or Y
MULT. 0, 1, or 2 eq. to get = and opp. coefficients

$7x + 3y = 4 \longrightarrow 7x + 3y = 4$
$3x + y = 4 \xrightarrow{(-3)} -9x - 3y = -12$

$$\frac{-2x}{-2} = \frac{-8}{-2}$$

$x = 4$

Find y

$3(4) + y = 4$
$12 + y = 4$
$y = -8$

$(4, -8)$

(EX)

$7x + 3y = 4$
$3x + y = 4 \xrightarrow{(-3)} -21x - 9y = -12$
$\xrightarrow{(7)} 21x + 7y = 28$

$$\frac{-2y}{-2} = \frac{16}{-2}$$

$y = -8$

Find X

$3x - 8 = 4$
$3x = 12$

$$\frac{3x}{3} = \frac{12}{3}$$

$x = 4$

$(4, -8)$

EBS

$7x + 3y = 4$

$3x + y = 4$

$y = -3x + 4$

Steps

① 4 choices: get either x or y by itself in either equation

② Elim. a variable by sub. into the other eq.

$7x + 3[-3x+4] = 4$

$7x - 9x + 12 = 4$

$-2x + 12 = 4$

$-12 \quad -12$

$\frac{-2x}{-2} = \frac{-8}{-2}$

$x = 4$

Find y

$3(4) + y = 4$

$y = -8$

$(4, -8)$

EBS

(7) $\begin{cases} 0 = 9y + 7x - 25 \\ 9 - 7x = y \end{cases}$

$0 = 9[9-7x] + 7x - 25$

$0 = 81 - 63x + 7x - 25$

$0 = 56 - 56x$

$\frac{-56}{-56} = \frac{-56x}{-56}$

$x = 1$

$\therefore y = 9 - 7(1) = 2$

$(1, 2)$

(8) $-x+3y=0$

$1=-x+3y$

EBS

$-x+3y=0 \xrightarrow{(-1)} x-3y=0$

$-x+3y=1 \rightarrow -x+3y=1$

$0=1$

FALSE

NO SOLUTION

$-x+3y=0$

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

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

$1=-x+3y$

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

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

$m=\frac{1}{3}$ ∴ //

(18) $-2x + 7y = 1 \xrightarrow{(3)} -6x + 21y = 3$ (EBA)

$6x + y = 19 \rightarrow \ominus\ 6x + y = 19$

$\frac{22y}{22} = \frac{22}{22}$

$y = 1$

$6x + 1 = 19$

$6x = 18$

$x = 3$

$(3, 1)$

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(5) $y = 6x + 10$ (EBS)

$y = 7x + 11$

$(6x + 10) = 7x + 11$

$6x + 10 = 7x + 11$

$-6x \quad -6x$

$10 = x + 11$

$-11 \quad -11$

$-1 = x$ $\therefore y = 6(-1) + 10$

$y = 4$ $(-1, 4)$

(14) $y = -4x$ EBS

$5x - 7y = 0$

$5x - 7(-4x) = 0$

$5x + 28x = 0$

$33x = 0$

$x = 0$

$y = 0$

$(0,0)$

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(15) $x - y = 6 \xrightarrow{(6)} 6x - 6y = 36$

EBA $-6x - 6y = -12 \xrightarrow{+} -6x - 6y = -12$

$\frac{-12y}{-12} = \frac{24}{-12}$

$y = -2$

$x + (-2) = 6$

$x + 2 = 6$

$x = 4$

$(4, -2)$