Expressions and Equations :-

expression : $2x-3$

Equation : $x+3 = 2x-5$

↳ separation → $8 = x$, $x = 8$

Factorizations:-

Common Factor $3x+9y+30 = 3(x+3y+10)$

General $x^2+5x-6 = (x+6)(x-1)$

Difference between two squares $x^2-4 = (x+2)(x-2)$

$(x^2+4) =$ prime expression

Perfect square $x^2 \pm 8x + 16 = (x \pm 4)^2$

$4x$	4^2
x^2	$4x$

$(x+4)$ $(x+4)$

Difference or sum of two cubes $x^3 \pm 8 = (x \pm 2)(x^2 \mp 2x + 4)$

Equation Manipulations:-

$3x+5 = 12y-3$

find $4y - x = ?$

$3+5 = 12y - 3x$

$8 = 3(4y-x)$

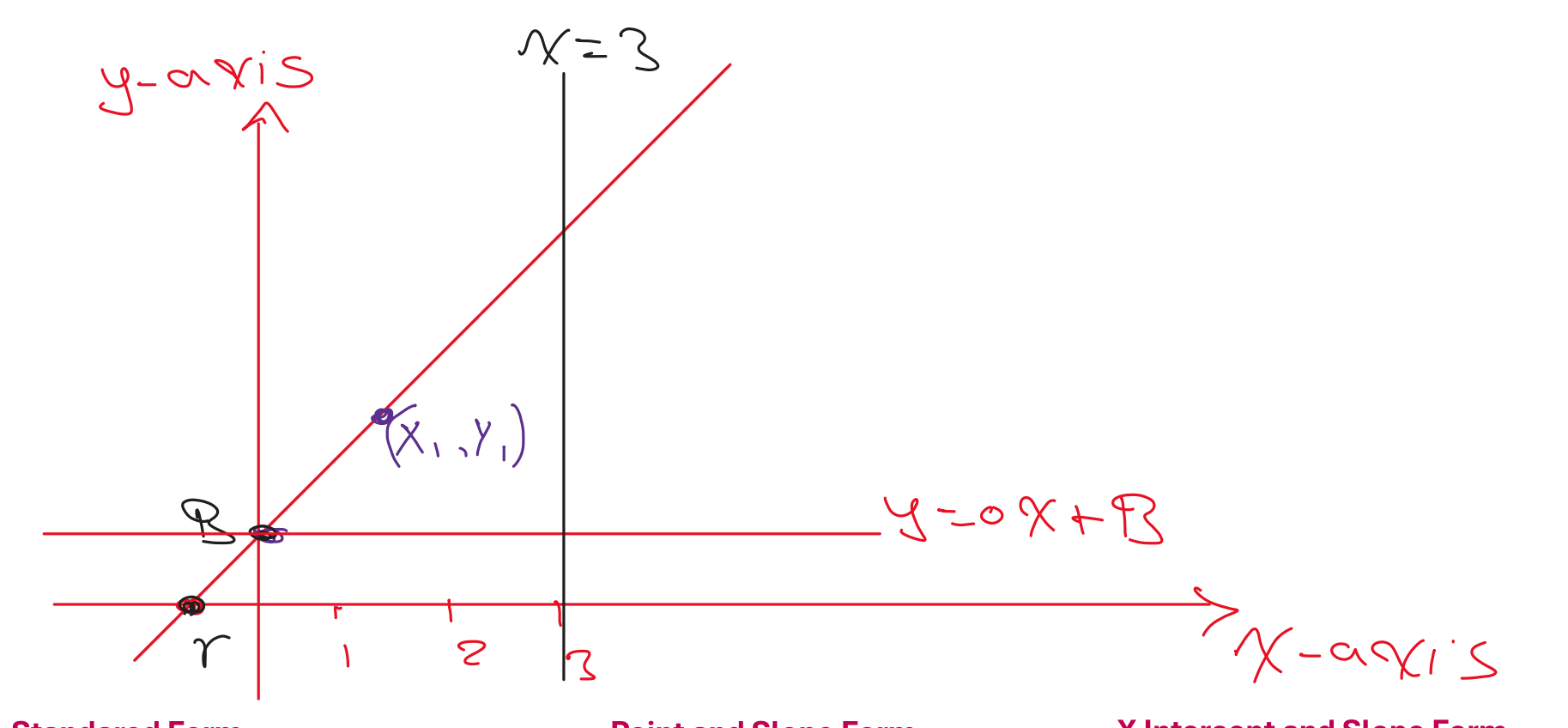
$\frac{8}{3} = 4y - x$

find y in terms of x. → seperate y

$\frac{3x+5+3}{12} = \frac{12y}{12}$

$y = \frac{3x+8}{12}$

Linear Equations :-



Y intercept + Slope Form

$y = mx + B$

slope $\frac{\Delta y}{\Delta x}$; Y-I initial $x=0$

$\frac{rise}{run} = \frac{y_2-y_1}{x_2-x_1}$

Standared Form

$ax+by=c$

slope $= -\frac{a}{b}$

$Y\text{-}I = \frac{c}{b}$

$X\text{-}I = \frac{c}{a}$

Point and Slope Form

$y - y_1 = m(x - x_1)$

X Intercept and Slope Form

$y = m(x-r)$

X-I at $y=0$

+hm

$y = 2x + 4$ (+h, +x, $\frac{+x}{m}$)

(1, 6) → (, 10) +4

same slope // $m_1 = m_2$

opp reciprocal ⊥ $m_1 * m_2 = -1$

Inequalities:-

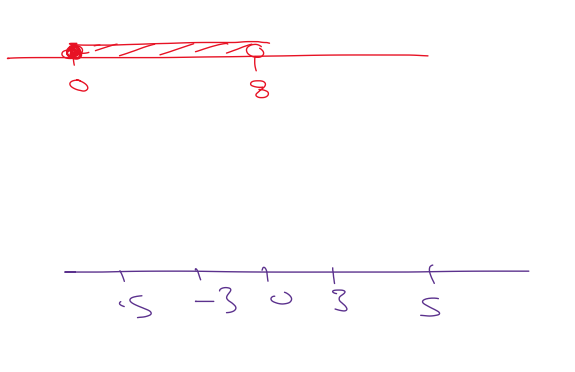
$12 \leq 3x+12 < 36$

$0 \leq 3x < 24$

$0 \leq x < 8$

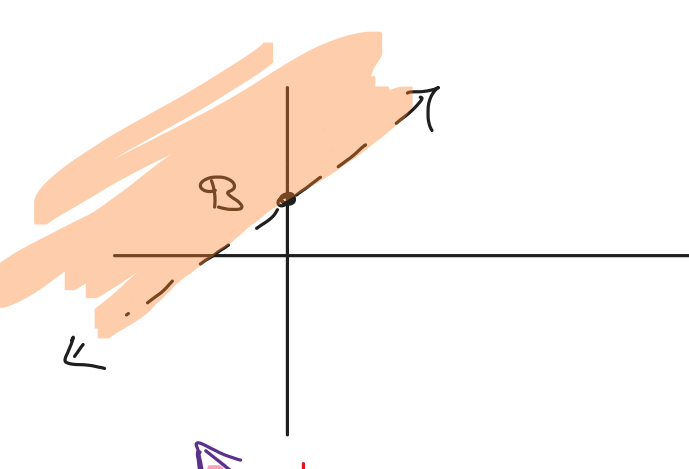
$x = [0, 8[$

(*(-1)) $3 < 5$ → $-3 > -5$

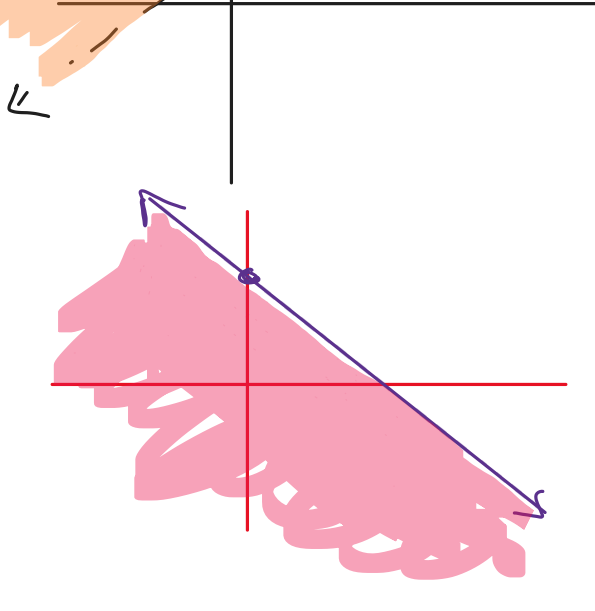


Linear Inequalities:-

$y > mx + B$



$y \leq m_2 x + B_2$

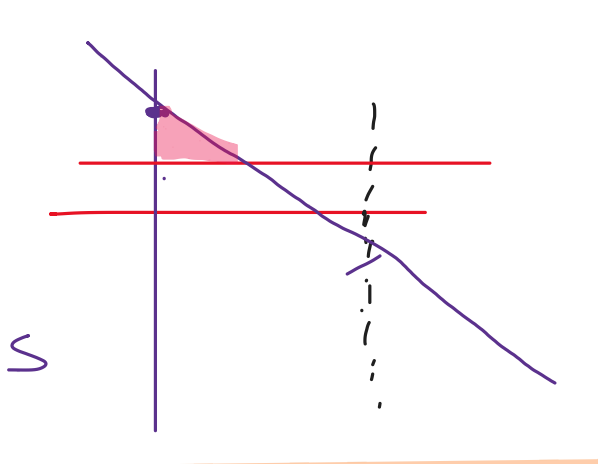


Area Boundary:-

$y \geq 3$

$0 < x < 10$

$y < -x+5$



Absolute Value and Distances :-

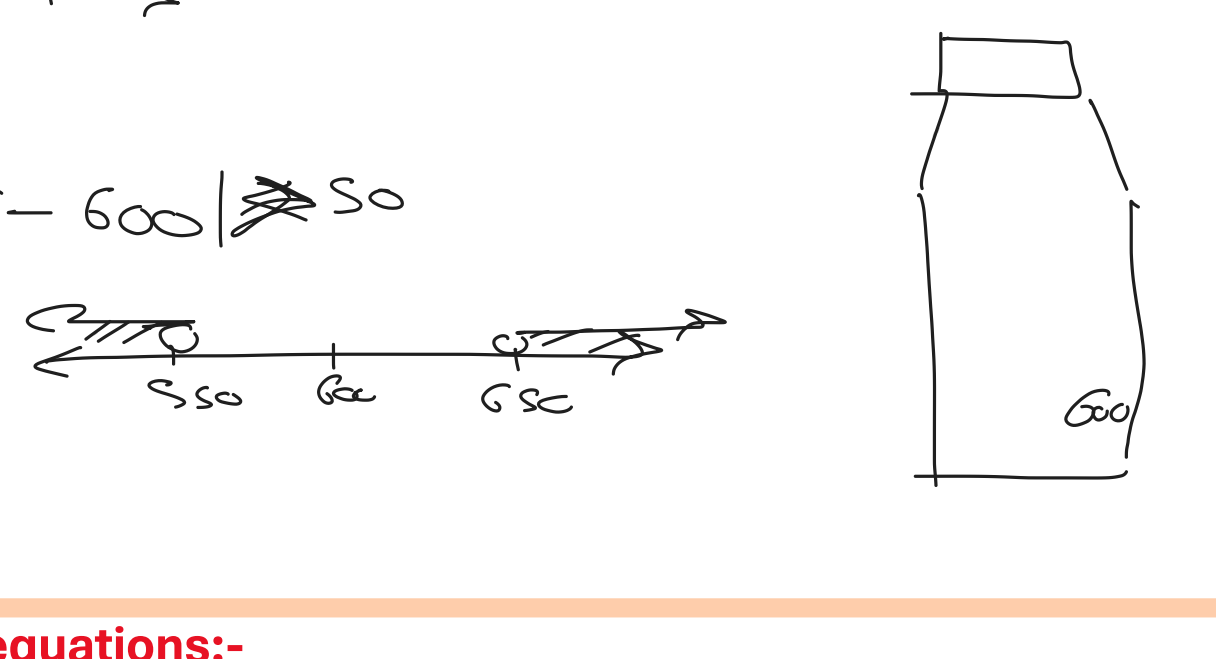
$\sqrt[2]{A^2} = |A| =$ A if $A \geq 0$; (-A) if $A \leq 0$

$|x-a| =$ The distance between "x" and "a".

	$\lvert x-3 \rvert = 1$	$\lvert x-3 \rvert < 1$
distances :	$x=2$ ← -1 3 +1 → $x=4$	2 3 4 ; $2 < x < 4$
Algebric :	$x-3<0$: $-(x-3)=1$; $x-3>0$: $x-3=1$	$x-3<0$: $-(x-3)<1$, $x-3>-1$, $x>2$ or $x-3>0$: $x-3<1$, $x<4$

$|x - Ideal| \leq$ or $\geq$ T ← acceptable error

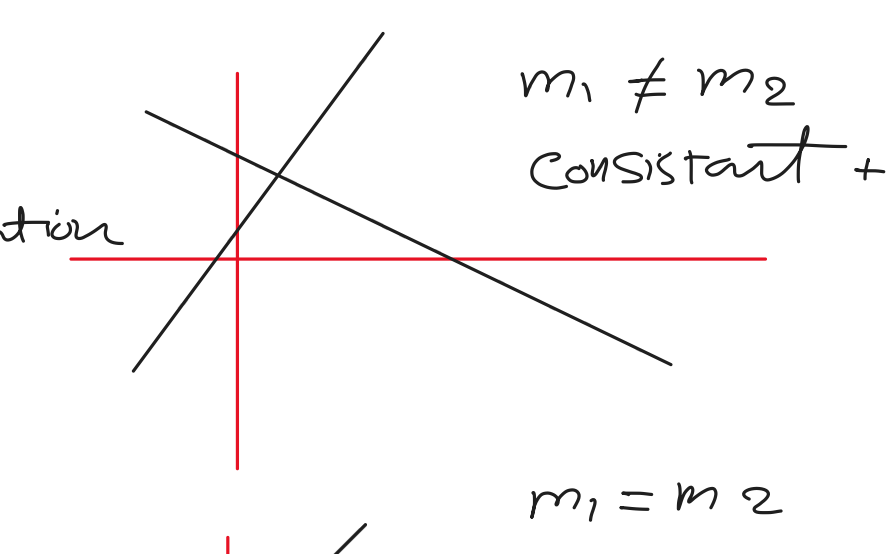
$|x-600| \geq 50$



Linear System of equations:-

$y = m_1 x + B_1$

$y = m_2 x + B_2$

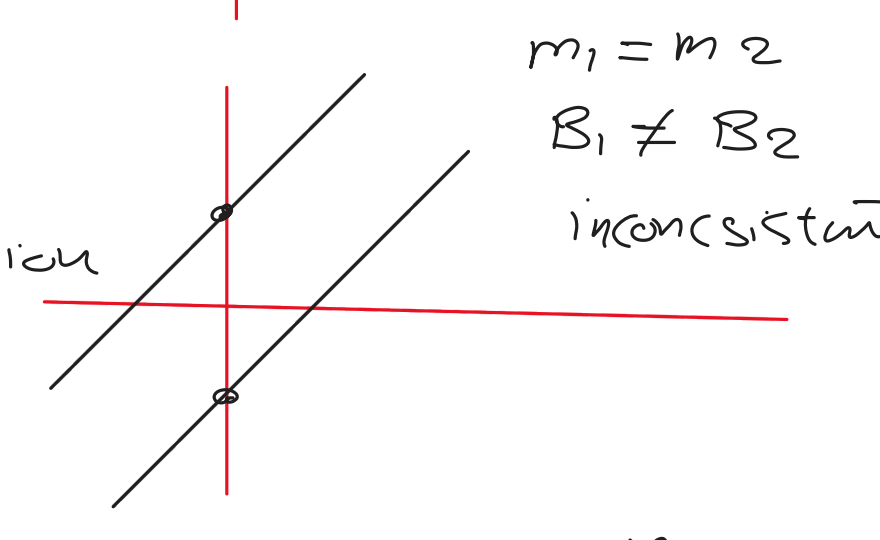


$m_1 \neq m_2$ consistant + independent

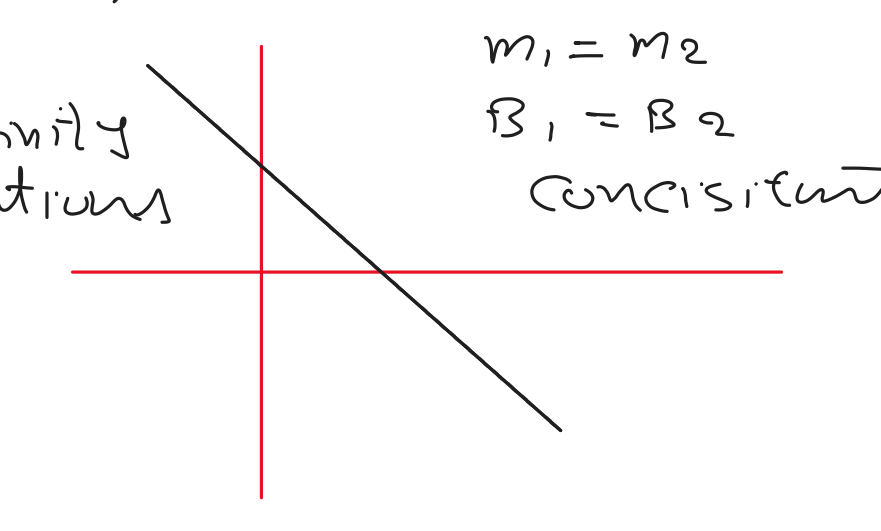
solutions:-

① substitution

② Linear combination ↳ ③ elemination



$m_1 = m_2$, $B_1 \neq B_2$ inconsistant



$m_1 = m_2$, $B_1 = B_2$ concisitant dependent

Linear System of Inequalities :-

$y > mx + B$

$y < m_2 x + B_2$