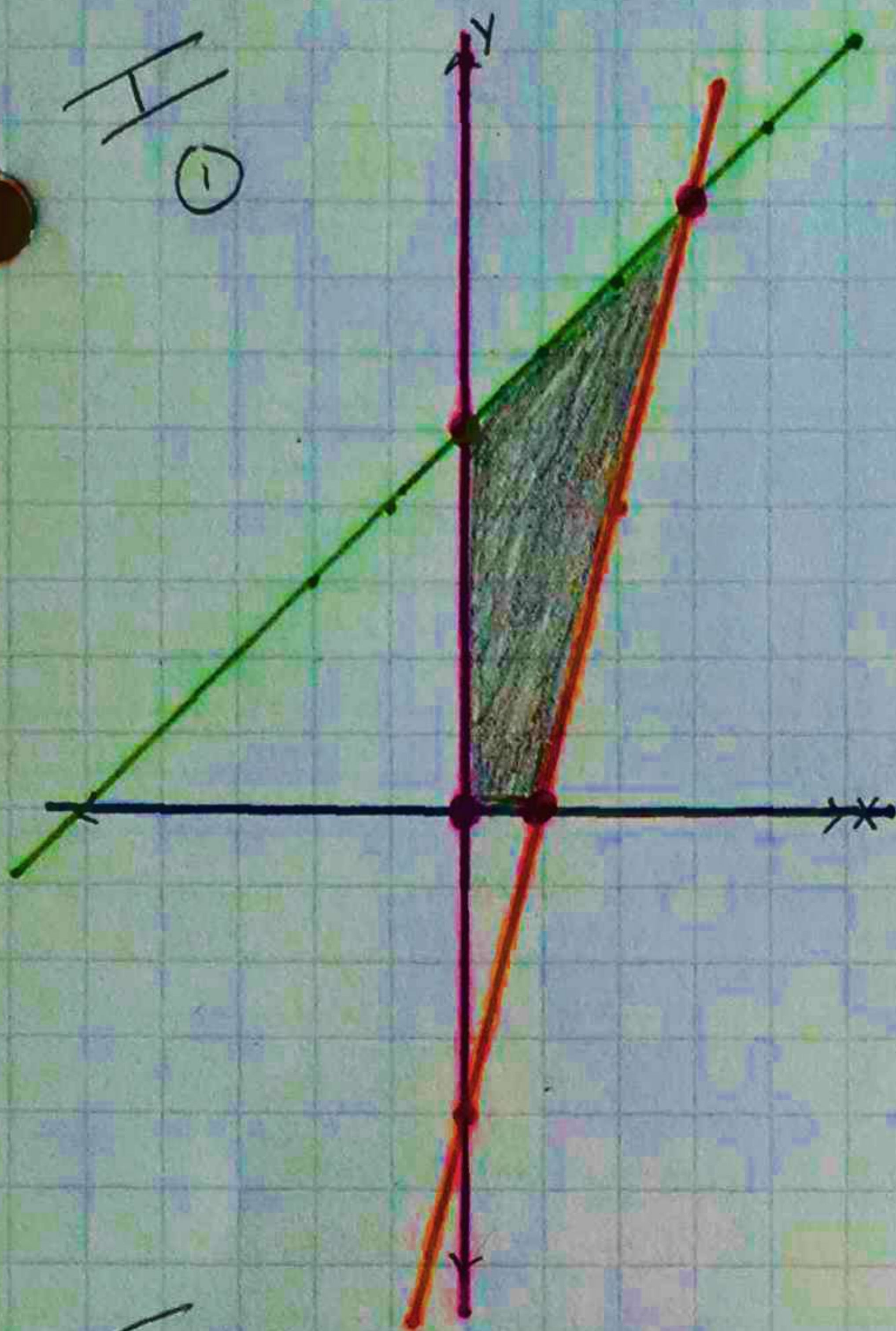


# 2nd Six Weeks Test Review

I  
①



$$\begin{aligned} x &\geq 0 \\ y &\geq 0 \\ y &\geq 4x - 4 \\ y &\leq x + 5 \end{aligned}$$

vertices:  
 $(0,0), (1,0)$   
 $(0,5), (3,8)$

②  $P = -21x + 11y$

$$\begin{aligned} -21(0) + 11(0) &= 0 \\ -21(1) + 11(0) &= -21 \\ -21(0) + 11(5) &= 55 \\ -21(3) + 11(8) &= 25 \end{aligned}$$

Maximum value of 55 at  $(0,5)$   
 Minimum value of -21 at  $(1,0)$

③ 
$$\begin{cases} x \geq 1 \\ 1 \leq y \leq 6 \text{ (or } y \geq 1, y \leq 6) \\ y \leq -x + 8 \end{cases}$$

II

④  $A+B \rightarrow$  not possible  
 (different dimensions)

⑤  $C-A = \begin{bmatrix} -2 & -5 \\ 2 & 4 \\ 5 & 0 \end{bmatrix}$

⑥  $-2D = \begin{bmatrix} 4 & -2 & -8 \\ 2 & 0 & -6 \end{bmatrix}$

⑦  $BD = \begin{bmatrix} -8 & 4 & 16 \\ -4 & 0 & 12 \end{bmatrix}$

⑧  $AC \rightarrow$  not possible  
 $A_{3 \times 2} \quad C_{3 \times 2}$   
 $3 \times 2 \quad 3 \times 2$

⑨  $E^{-1} = \begin{bmatrix} 2/41 & -8/41 & 1/41 \\ -9/82 & -5/82 & 8/41 \\ 10/41 & 1/41 & 5/41 \end{bmatrix}$

⑩  $C_{2 \times 2} = 2$   
 row column

⑪ dimensions of  $AD = 3 \times 3$   
 $A_{3 \times 2} \quad D_{2 \times 3}$

III

⑫  $AB = 5 \times 5$   
 $A_{5 \times 2} \quad B_{2 \times 5}$   
 $5 \times 2 \quad 2 \times 5$

⑬  $CB \Rightarrow$  not possible  
 $C_{1 \times 5} \quad B_{2 \times 5}$   
 $1 \times 5 \quad 2 \times 5$

⑭  $AR \Rightarrow$  not possible  
 $A_{5 \times 2} \quad R_{5 \times 2}$   
 $5 \times 2 \quad 5 \times 2$

⑮  $RB = 5 \times 5$   
 $R_{5 \times 2} \quad B_{2 \times 5}$   
 $5 \times 2 \quad 2 \times 5$

⑯  $CA = 1 \times 2$   
 $C_{1 \times 5} \quad A_{5 \times 2}$   
 $1 \times 5 \quad 5 \times 2$

IV (17)  $\begin{bmatrix} 2 & -3 \\ 4 & 1 \end{bmatrix}^{-1} = \begin{bmatrix} 1/4 & 3/4 \\ -2/7 & 1/7 \end{bmatrix}$

(18)  $\begin{bmatrix} -1 & 4 & 0 \\ 2 & 1 & 1 \\ -3 & -2 & 1 \end{bmatrix}^{-1} = \begin{bmatrix} -3/23 & 4/23 & -4/23 \\ 5/23 & 1/23 & -1/23 \\ 1/23 & 14/23 & 9/23 \end{bmatrix}$

V (19)  $\begin{cases} 3x - y = 6 \\ x = 2y + 1 \rightarrow x - 2y = 1 \end{cases}$

$\begin{bmatrix} 3 & -1 \\ 1 & -2 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 6 \\ 1 \end{bmatrix}$   
 A B

$A^{-1}B = \begin{bmatrix} 11/5 \\ 3/5 \end{bmatrix}$   
 $(11/5, 3/5)$

(20)  $\begin{cases} x + 2y + z = 5 \\ 2x - y - 3z = 5 \\ -2x + 3y + z = -11 \end{cases}$

$\begin{bmatrix} 1 & 2 & 1 \\ 2 & -1 & -3 \\ -2 & 3 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 5 \\ 5 \\ -11 \end{bmatrix}$   
 A B

$A^{-1}B = \begin{bmatrix} 5 \\ -1 \\ 2 \end{bmatrix}$   
 $(5, -1, 2)$

VI (21)  $\begin{bmatrix} 4 & 2x+3 \\ 5y-1 & 2 \end{bmatrix} = \begin{bmatrix} 4 & -1 \\ 2y & 2 \end{bmatrix}$

$2x + 3 = -1$   
 $-3 \quad -3$   
 $\hline 2x = -4$   
 $x = -2$

$5y - 1 = 2y$   
 $-1 = -3y$   
 $y = 1/3$

$x = -2, y = 1/3$

VII (22)  $\sqrt{98}$   
 $\sqrt{49} \sqrt{2}$   
 $7\sqrt{2}$

(23)  $4\sqrt{32}$   
 $\sqrt{16} \sqrt{2}$   
 $4 \cdot 4\sqrt{2}$   
 $16\sqrt{2}$

(24)  $5\sqrt{12} \cdot \sqrt{24}$   
 $5\sqrt{288}$   
 $\sqrt{144} \sqrt{2}$   
 $5 \cdot 12\sqrt{2}$   
 $60\sqrt{2}$

(25)  $\sqrt{28} - 2\sqrt{63} + 5\sqrt{7}$   
 $\sqrt{4} \sqrt{7} \quad \sqrt{9} \sqrt{7}$   
 $2\sqrt{7} - 2 \cdot 3\sqrt{7} + 5\sqrt{7}$   
 $2\sqrt{7} - 6\sqrt{7} + 5\sqrt{7}$   
 $\sqrt{7}$

(26)  $\frac{7}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{7\sqrt{6}}{6}$

VIII

$$\textcircled{27} \frac{4a^{-2}b}{12a^3b^{-4}}$$

$$\frac{1}{3} \frac{a^2}{a^3} \frac{b}{b^{-4}}$$

$$\frac{b^5}{3a^5}$$

$$\textcircled{28} \frac{(3a^2b)^3(2ab^3)}{(3)^3(a^2)^3(b)^3}$$

$$27a^6b^3$$

$$(27 \cdot 2)(a^6 \cdot a)(b^3 \cdot b^3)$$

$$54a^7b^6$$

$$\textcircled{29} \frac{(4ab^2)(-3a^2b^4)}{(4 \cdot -3)(a^1a^2)(b^2b^4)}$$

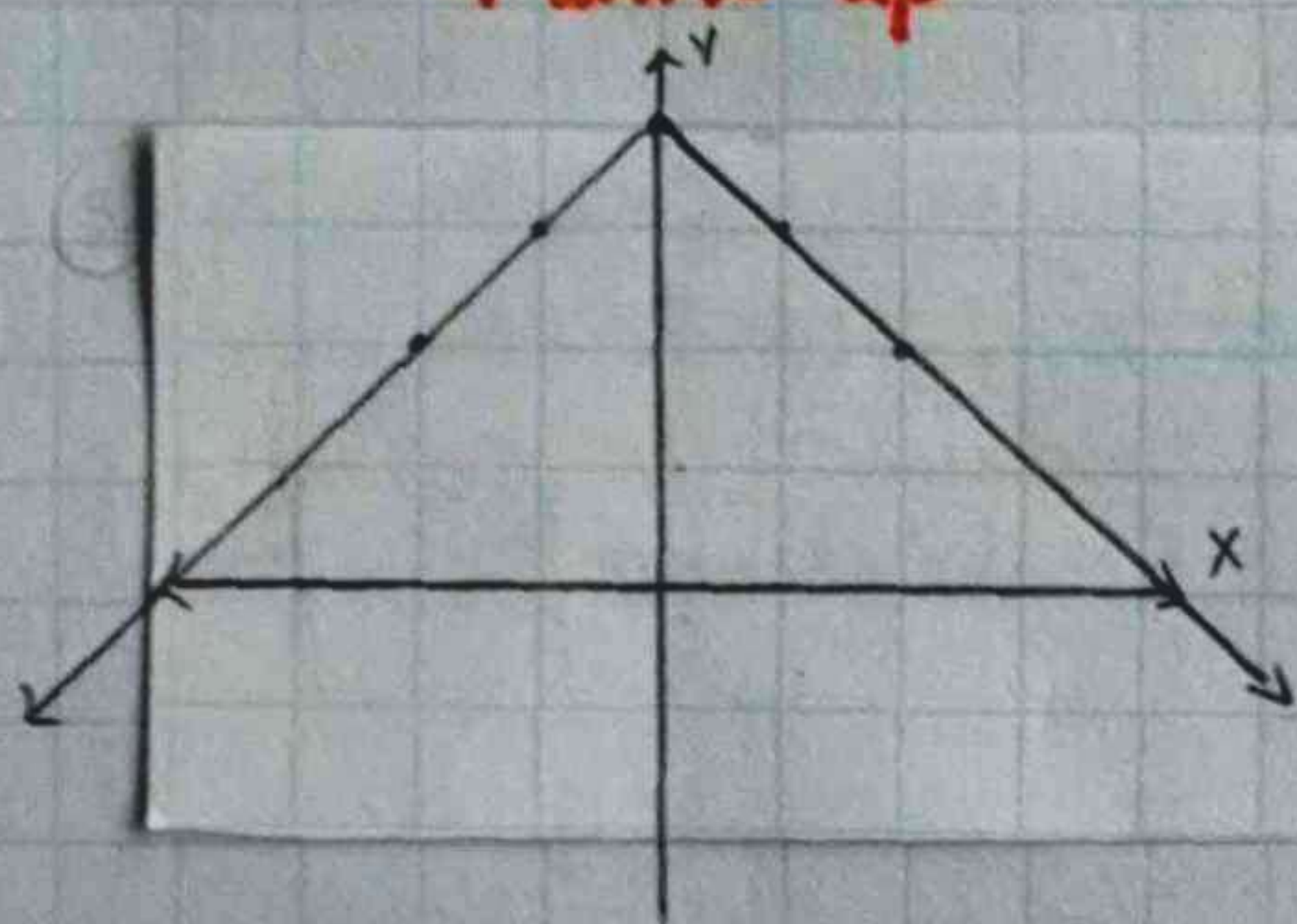
$$\frac{-12a^3b^6}{-12a^3b^6}$$

IX

$$f(x) = a|x-h|+k \quad g(x) = ($$

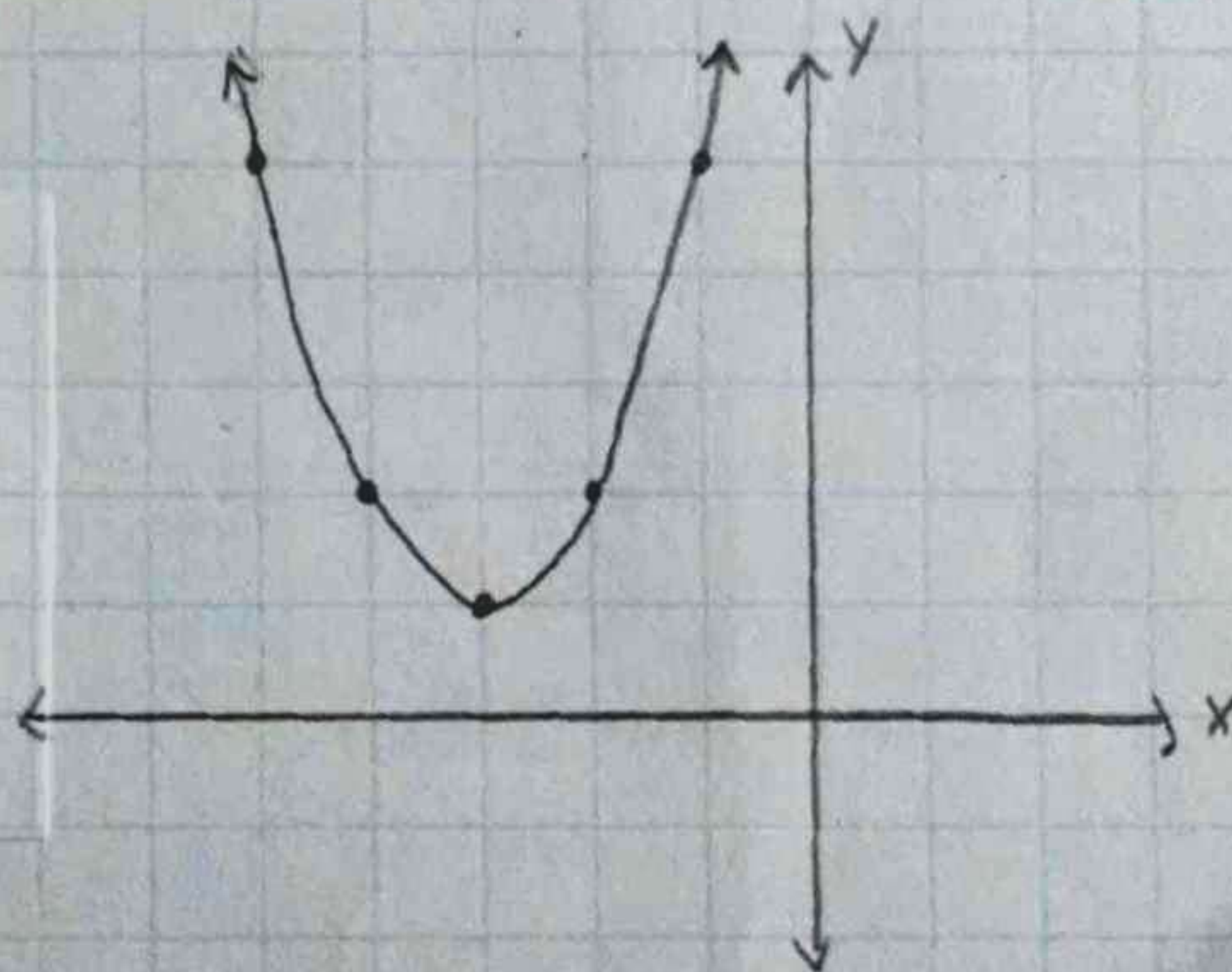
$$\textcircled{30} y = -|x| + 4$$

reflection across x-axis  
vertical translation  
4 units up



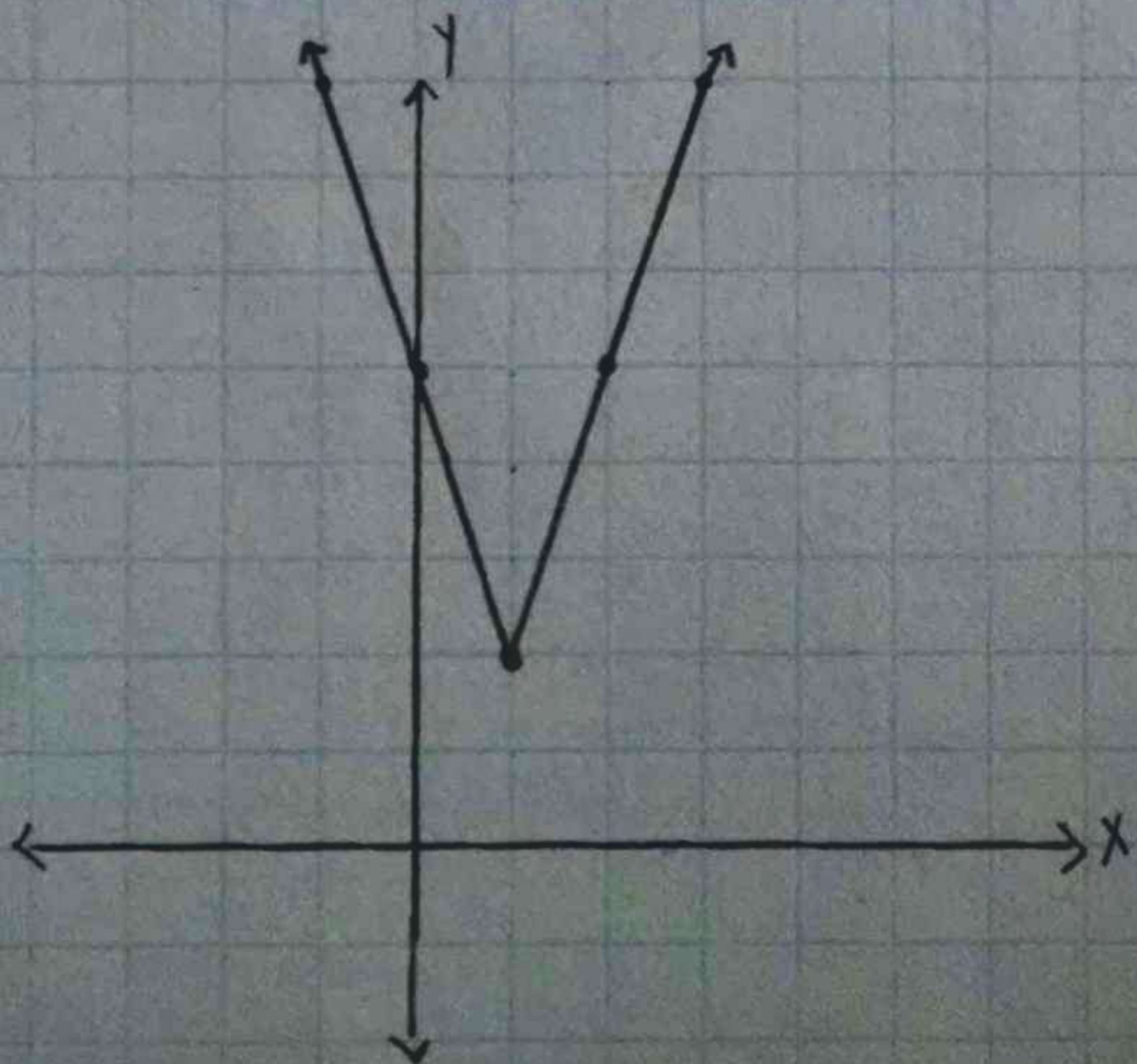
$$\textcircled{31} y = (x+3)^2 + 1$$

horizontal translation 3 units left  
vertical translation 1 unit up



$$\textcircled{32} y = 3|x-1| + 2$$

vertical stretch by factor of 3  
horizontal translation 1 unit to the right  
vertical translation 2 units up

X

$$\textcircled{33} y = |x+3| - 1$$

Domain:  $\mathbb{R}$   
Range:  $y \geq -1$

$$\textcircled{34} y = (x+2)^2 - 5$$

Domain:  $\mathbb{R}$   
Range:  $y \geq -5$