

۲۰ خنجر خوب نوشتن آفرین :

سارینا انسانی روزهم دفتر B - شماره تلفن ۵

الف) $y = \frac{|x|+1}{|x|-2}$

①
②

$$y|x|-2y = |x|+1$$

$$y|x|-|x| = 2y+1$$

$$|x|(y-1) = 2y+1 \rightarrow |x| = \frac{2y+1}{y-1}$$

$$\frac{-\frac{1}{2} \quad 1}{+\phi - \phi +}$$

$$R_f = \left(\frac{-\infty}{2}\right] \cup (1, +\infty)$$

ب) $y = \frac{x^2+1}{|x|}$

$$|x| + \frac{1}{|x|} \xrightarrow{|x| \geq 0} R_f = [2, +\infty)$$

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$$y = \frac{x^2+2x-2}{x+3}$$

$$yx+3y = x^2+2x-2$$

$$0 = x^2+2x-yx-2-3y$$

$$0 = x^2+(2-y)x-2-3y$$

$$\Delta \geq 0 \quad (2-y)^2 - 4(-2-3y) \geq 0$$

$$4+y^2-4y+8+12y \geq 0$$

$$y^2+8y+12 \geq 0$$

$$(y+4)(y+2) \geq 0 \quad \frac{-4 \quad -2}{+\phi - \phi +}$$

$$R_f = (-\infty, -4] \cup [-2, +\infty)$$

③
②

$$f(x) = \frac{x^2-x+\frac{1}{k}}{x^2-x+1}$$

$$x^2-x+1 \neq 0$$

$$\Delta = b^2-4ac = 1-k = -2 < 0, a > 0$$

$$D_f = \mathbb{R} \leftarrow x^2-x+1 \leftarrow \text{همیشه مثبت است}$$

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

$$0 = x^2-yx^2-x+yx+\frac{1}{k}-y \rightarrow x^2(1-y)+x(y-1)+\frac{1}{k}-y=0$$

DAT

$$2 = \frac{y-1 \pm \sqrt{(y-1)^2 - 4(y-1)(y-\frac{1}{k})}}{4(y-1)} \rightarrow y \neq 1$$

$$(y-1)^2 - (y-1)(ky-1) \geq 0 \rightarrow (y-1)(y-1 - ky+1) \geq 0$$

$$-ky(y-1) \geq 0$$

$$\rightarrow R_f = [0, 1] \checkmark$$

الف) $y = \sqrt{-x^2 + kx - 1}$

max $\left| \begin{array}{l} \frac{-b}{4a} = \frac{-k}{-4} = \frac{k}{4} \\ -k+1-1 = -k \end{array} \right|$

$y = \sqrt{(-\infty, k]} \rightarrow R_f = [0, \sqrt{k}] \checkmark$

ب) $y = \sqrt[3]{kx^2 - 12x}$

min $\left| \begin{array}{l} \frac{-b}{4a} = \frac{12}{2k} = \frac{6}{k} \\ 2xk - 12 = -12 \end{array} \right|$

$y = \sqrt[3]{[-12, +\infty)} \rightarrow R_f = [-2, +\infty) \checkmark$

الف) $y = \log(a^x - x + 1)$

$\rightarrow (-\infty, +\infty)$

$\rightarrow \log(0, +\infty) \rightarrow R_f = (-\infty, -\infty)$

$\log_1 0 = -\infty$, $\log_1^{+\infty} = +\infty \rightarrow \mathbb{R} \checkmark$

ب) $y = \log_r \frac{2x+1}{x}$

$\frac{2x+1}{x} > 0 \rightarrow x > 0$

$x + \frac{1}{x} \geq 2$

$y = \log_r [2, +\infty)$

$\rightarrow R_f = [1, +\infty) \checkmark$

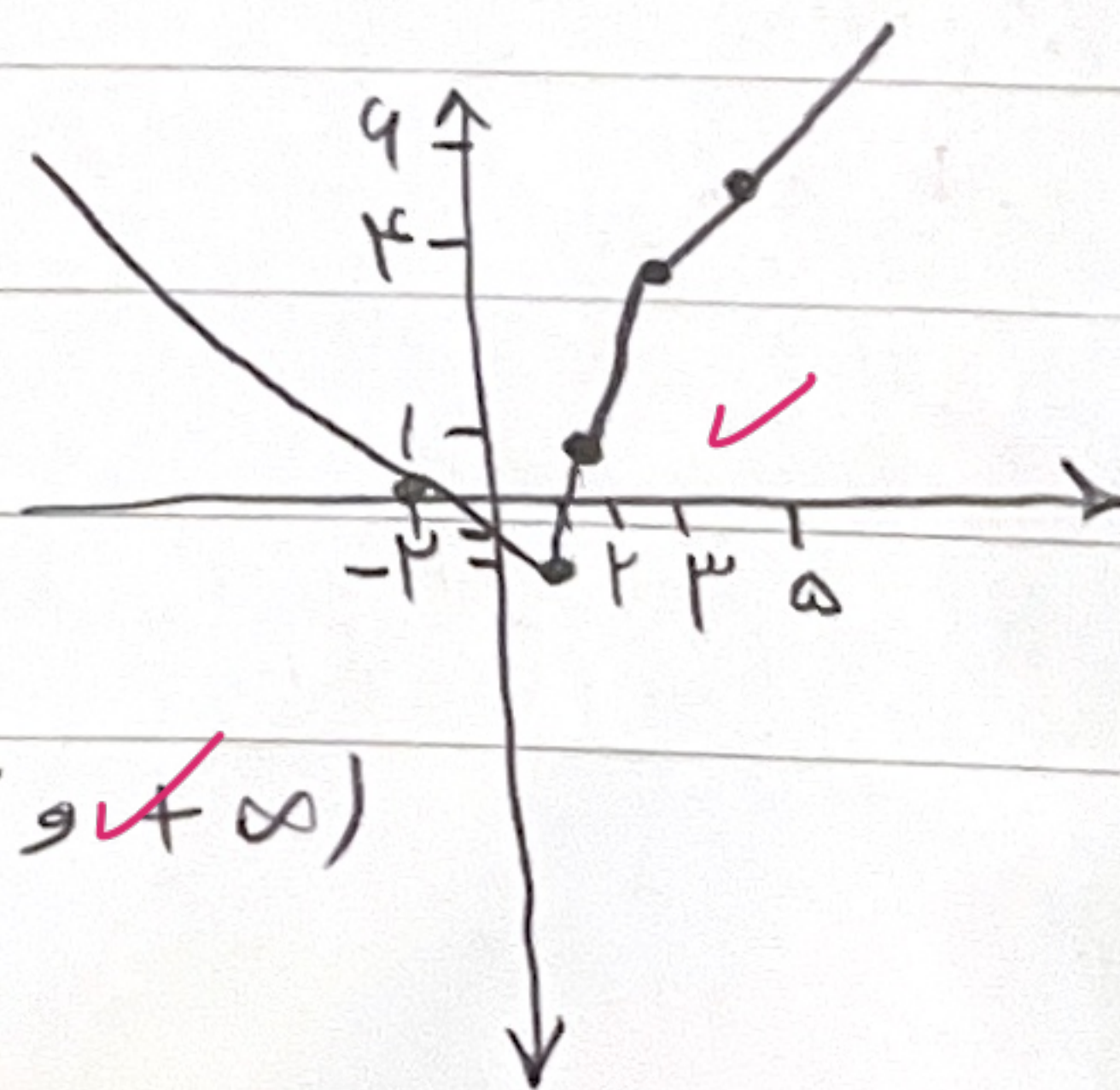
الف) $y = |kx-2| - |x-3|$

$-x+3$

$-kx+2+x-3 = -kx-1$	$ kx-2 $	$kx-2-x+3 = kx+1$
$-kx-1$	$kx-2$	

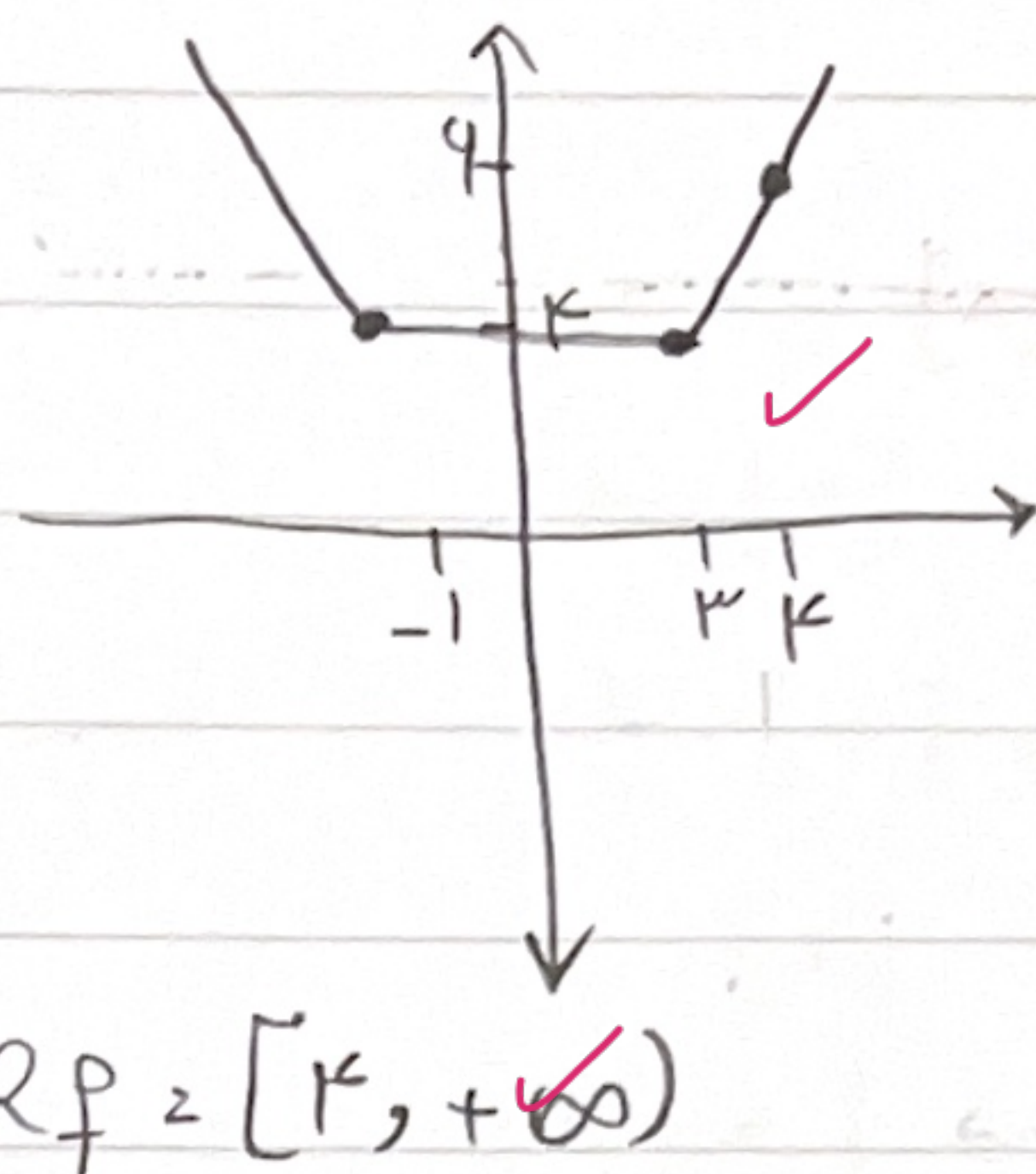
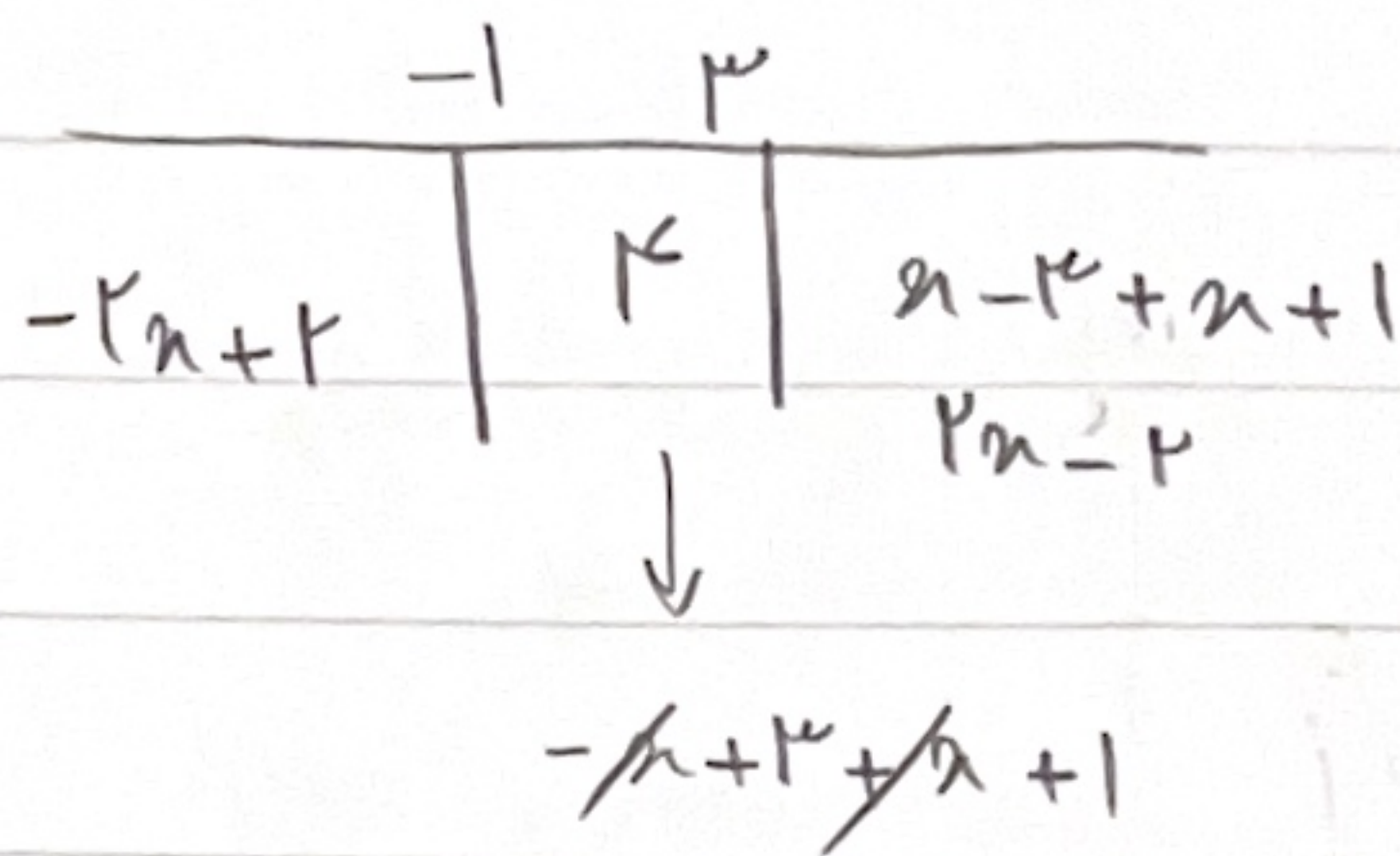
$kx-2+x-3$

$R_f = [-2, +\infty) \checkmark$



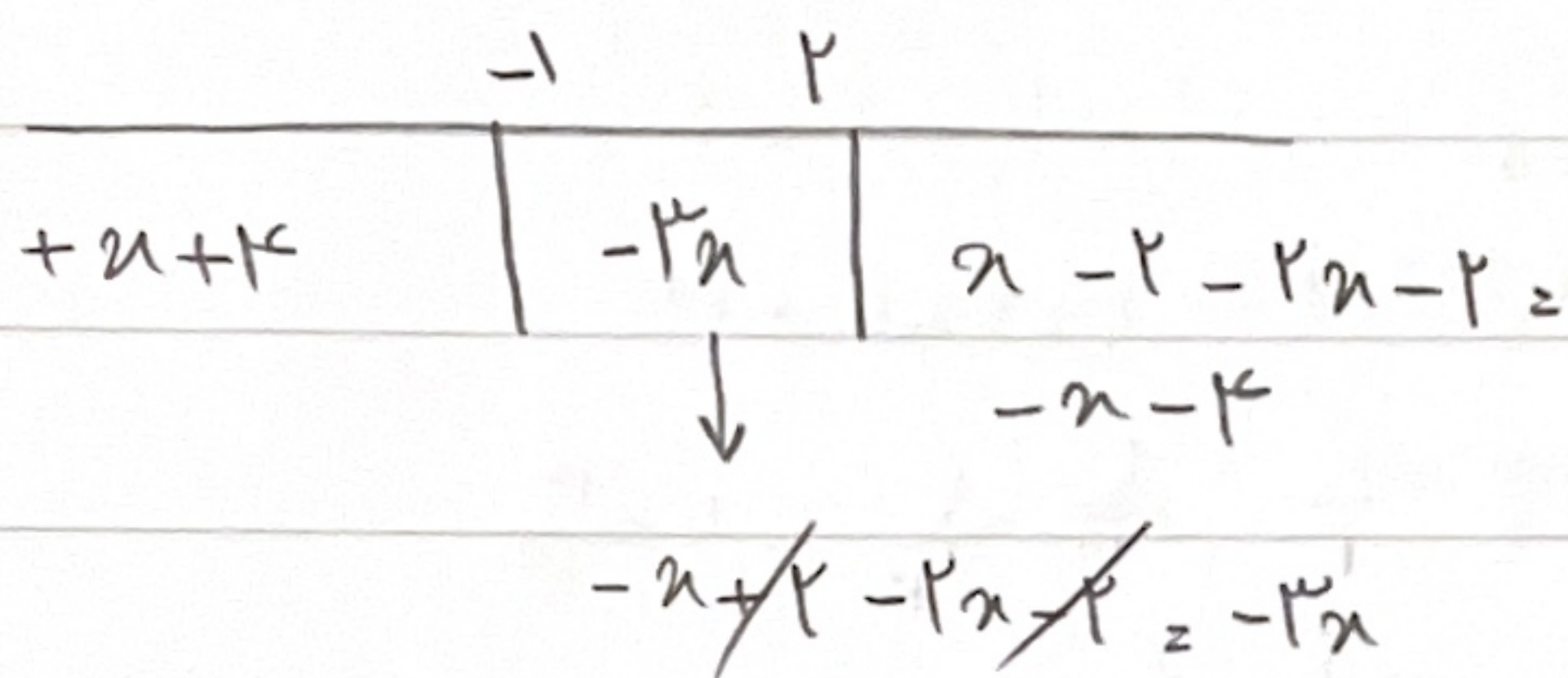
DAT

ب) $y = |x-2| + |x+1|$

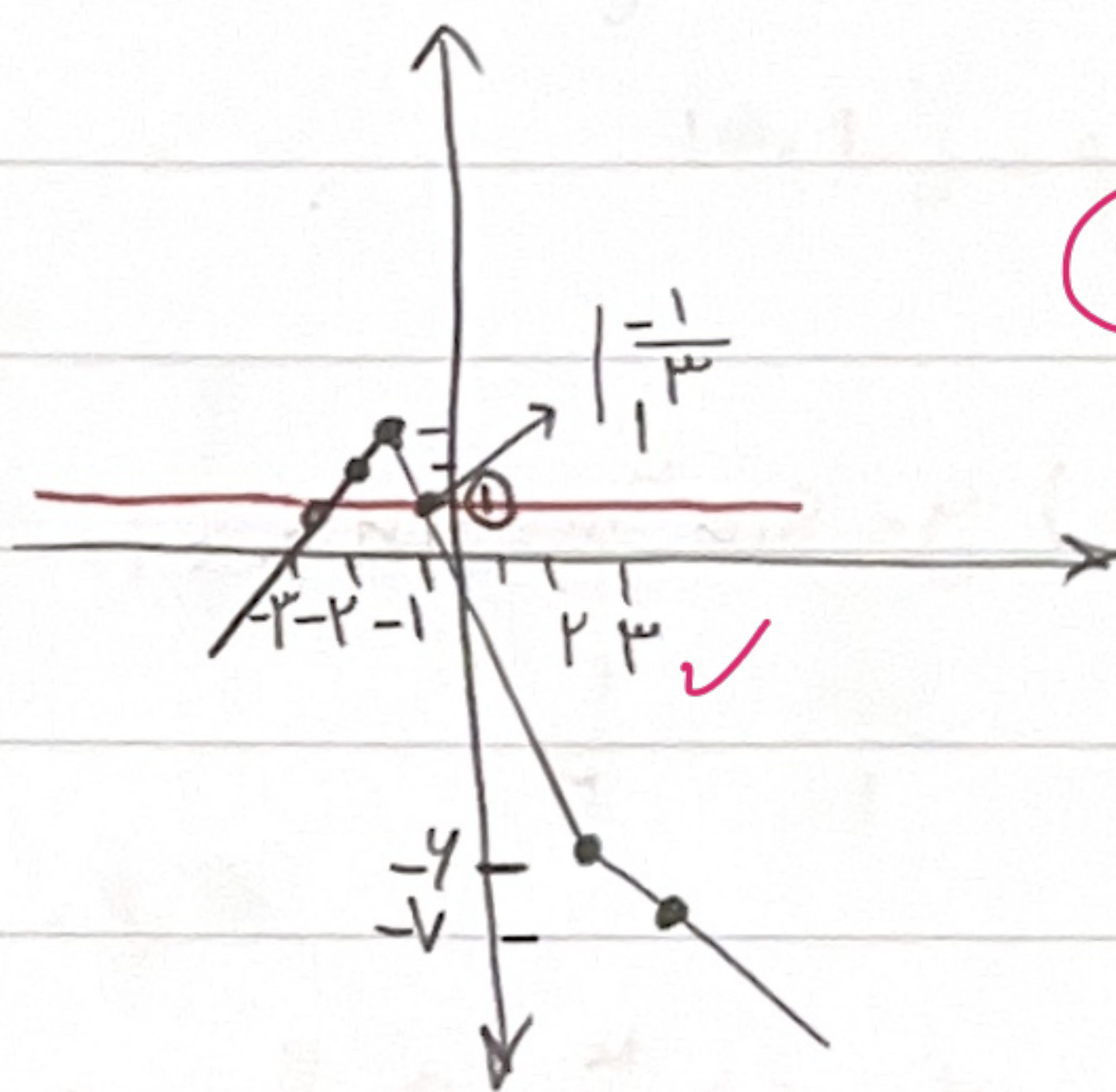


$R_f = [2, +\infty)$

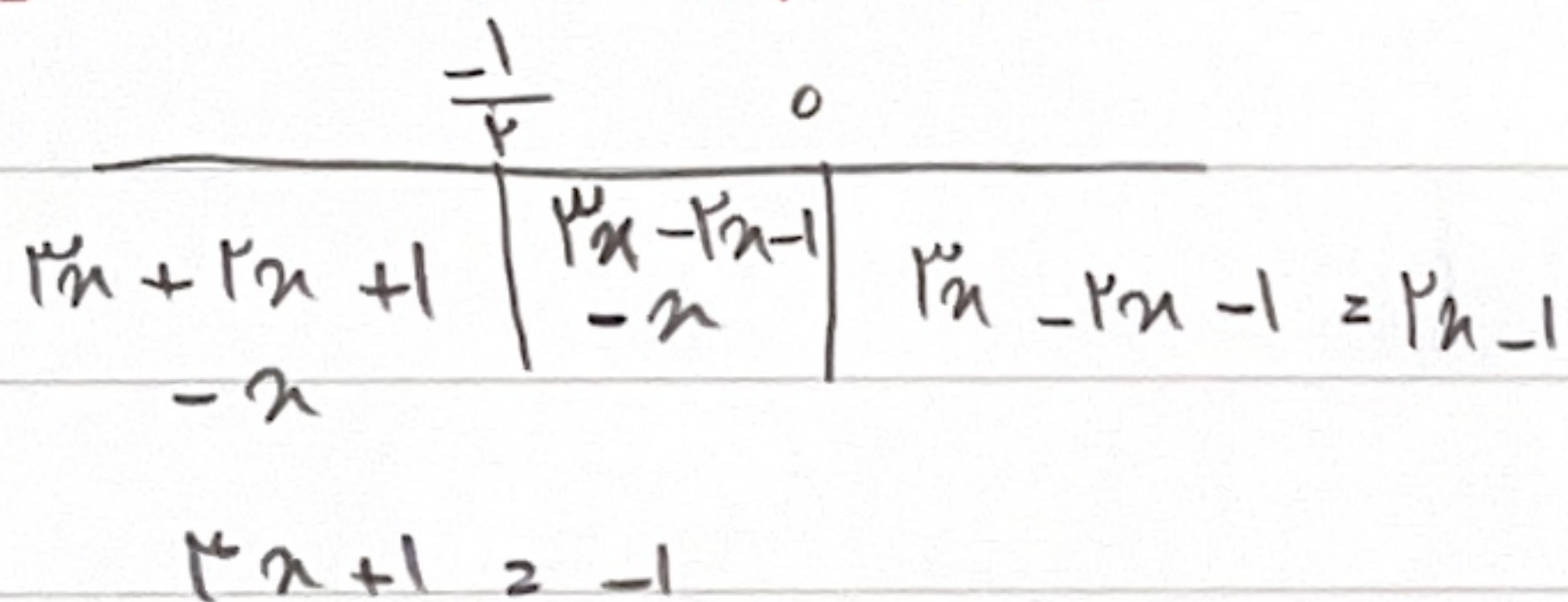
① $|x-2| - |2x+2| < 1$



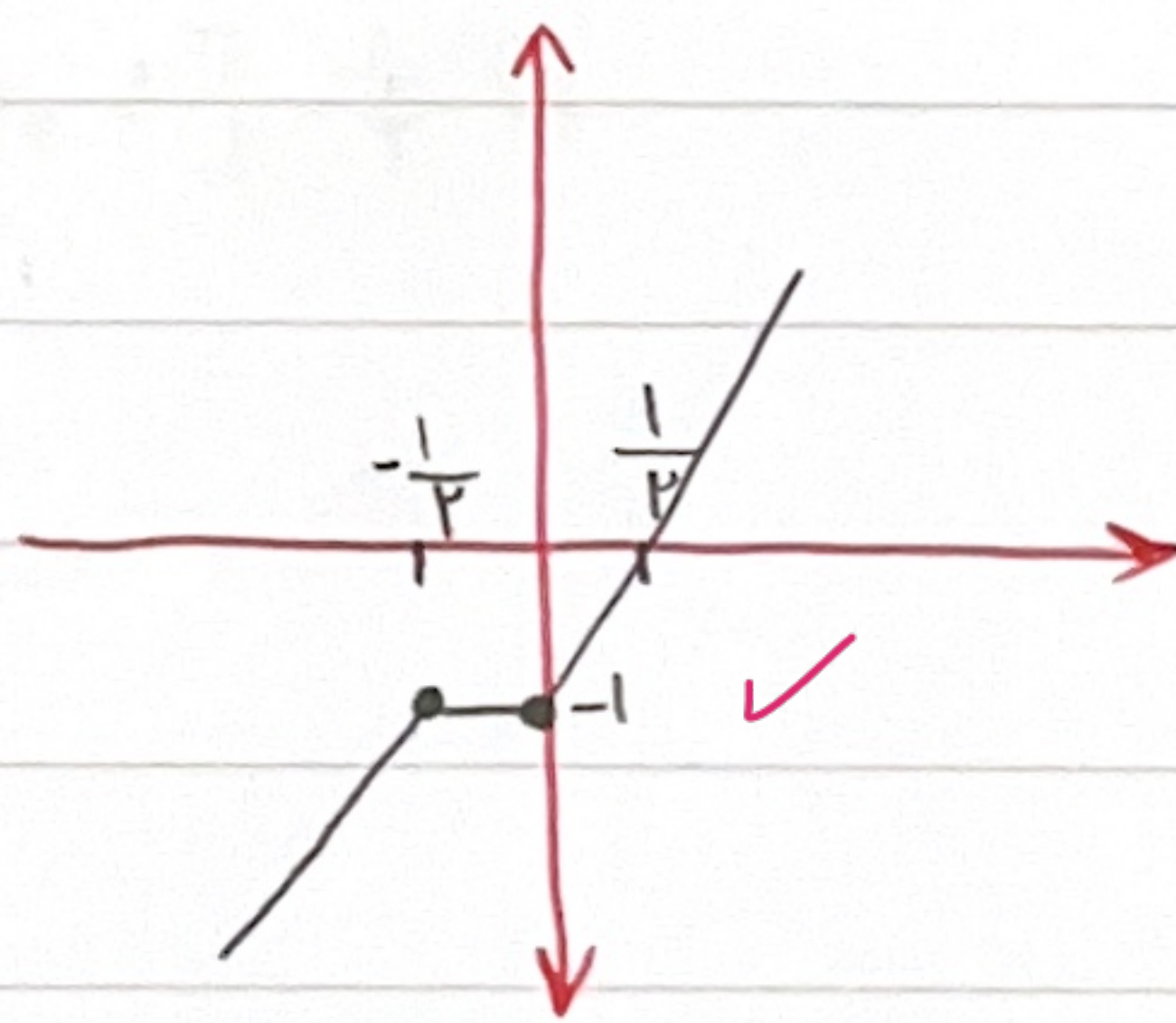
$R_f = \mathbb{R} - (-2, -\frac{1}{2})$



$y = 2x - |2x+1| + |x|$

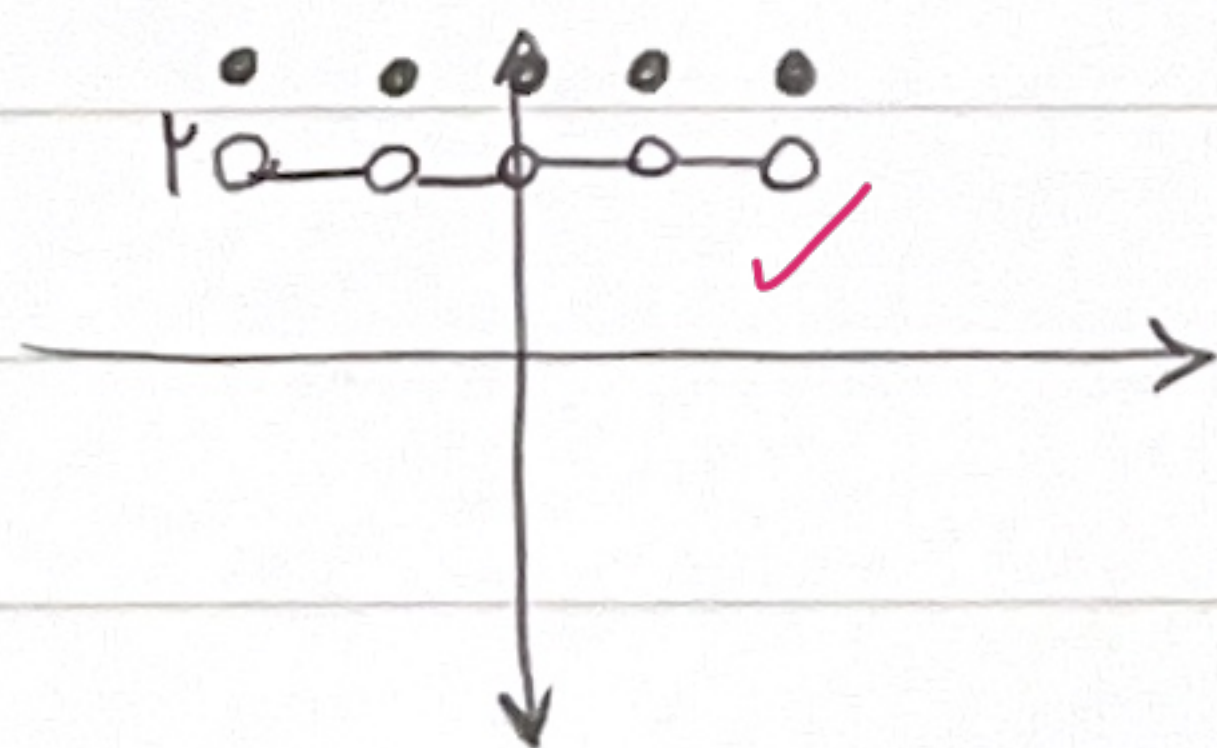


$R_f = \mathbb{R}$



الف) $y = [x] + [2-x] [x] + [-x] + 3$

مثلاً $y = [x] + [-x]$ راسه واحد به سمت بالا استقلال می ده



$R_y = [2, 3]$

$$ب) y = \lfloor x \rfloor - [x]$$

$$-1 \leq x < -1 \rightarrow [x] = -1$$

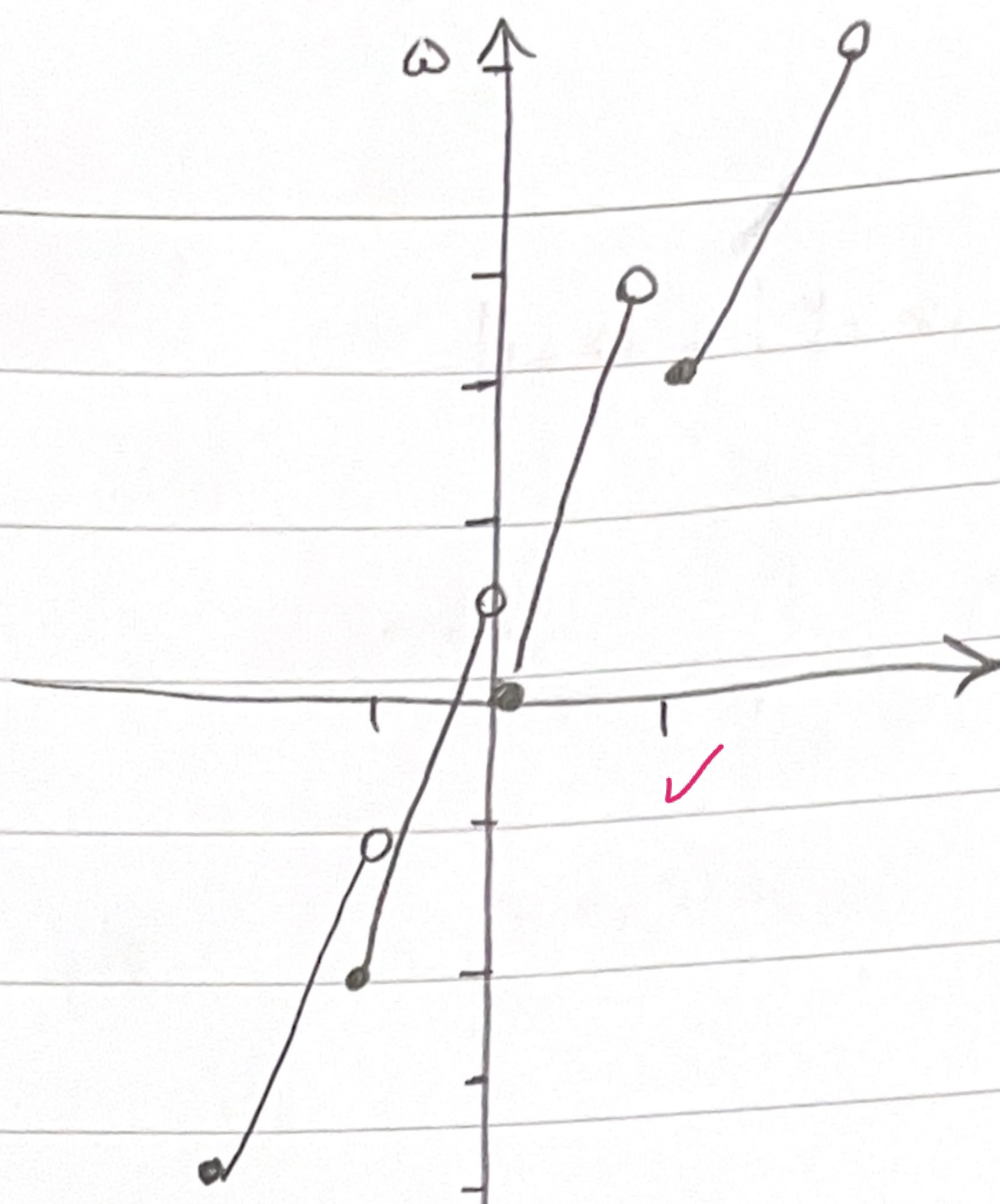
$$-1 \leq x < 0 \rightarrow [x] = -1$$

$$0 \leq x < 1 \rightarrow [x] = 0$$

$$1 \leq x < 2 \rightarrow [x] = 1$$

$$x = 2 \rightarrow y = 2$$

$$R_f = [-1, \infty) \checkmark$$



$$الف) y = \sin^2 x - \sin x + 1$$

$$\frac{-b}{2a} = \frac{1}{2}$$

$$R_f = \left[\frac{1}{2}, 2\right] \checkmark$$

$$\sin^2 x \geq 0$$

$$\sin^2 x \geq 1$$

$$\sin^2 x = \frac{1}{2}$$

$$1 - 1 + 1 = 1$$

$$1 + 1 + 1 = 3$$

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

(10)
(2)

$$ب) y = \sin^2 x + \sin^2 x + 1$$

$$\frac{-b}{2a} = -\frac{1}{2}$$

$$R_f = [1, 2] \checkmark$$

$$\sin^2 x \geq 0 \quad 0 + 0 + 1 = 1$$

$$\sin^2 x \geq 1 \quad 1 + 1 + 1 = 3$$

$$\sin^2 x = -\frac{1}{2}$$

x