

تکلیف 20

آرایی خنجرار

①

$$\frac{1}{x-1} < |x-1| \rightarrow 1 < x < 1 \rightarrow \frac{1}{x-1} < x-1$$

$$(x-1)^2 < 1 \rightarrow x^2 - 2x + 1 < 1$$

$$x < 1 \rightarrow \frac{1}{x-1} < 1-x \rightarrow x^2 - 2x + 1 < 0$$

$$-x^2 + 2x + 1 < 0 \rightarrow \Delta = 4 - 4(-1)(1) = 8$$

$$x < 1 \rightarrow x < \frac{1}{2}$$

$$x < 1 \rightarrow x < \frac{1}{2}$$

$$\left| \frac{2x-1}{x} \right| < 2 \rightarrow -2 < \frac{2x-1}{x} < 2 \rightarrow \text{الف} \quad \text{②}$$

$$0 < \frac{2x-1}{x} + 2 \rightarrow \frac{2x-1}{x} < 2 \rightarrow \frac{2x-1}{x} < 2 \rightarrow \frac{2x-1}{x} < 2$$

$$\frac{2x-1}{x} - 2 < 0 \rightarrow -\frac{1}{x} < 0 \rightarrow x > 0$$

$$\text{استخراج} \rightarrow x > \frac{1}{2}$$

$$\left| \frac{x-2}{2x+1} \right| > 1 \rightarrow \frac{x-2}{2x+1} > 1 \rightarrow \frac{x-2}{2x+1} > 1$$

$$x-2-2x-1$$

$$2x+1$$

$$-x-3 > 0 \rightarrow \frac{-x-3}{2x+1} > 0$$

$$3x-1$$

$$2x+1$$

$$-2 < \frac{-x-3}{2x+1}$$

$$\frac{x-2}{2x+1} < -1 \rightarrow \frac{x-2}{2x+1} + 1 < 0$$

$$\frac{x-2}{2x+1} + 1 < 0$$

$$\frac{1}{2} < \frac{x-2}{2x+1}$$

$$-2 < \frac{-x-3}{2x+1}$$

Espadana

$$\text{استخراج} \rightarrow (-3, -\frac{1}{2})$$

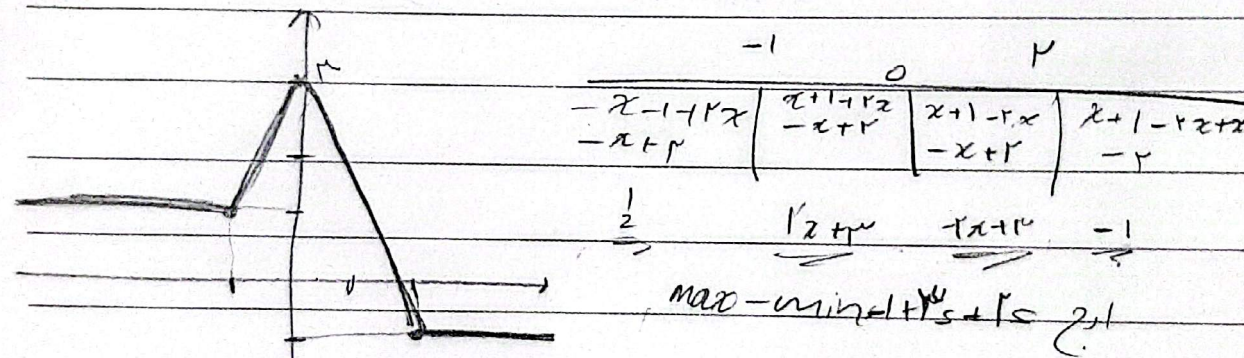
$$\Delta_{1-2} < 0$$

$$|x - \alpha| < \beta \quad -\beta < x - \alpha < \beta \xrightarrow{+\alpha} \alpha - \beta < x < \alpha + \beta$$

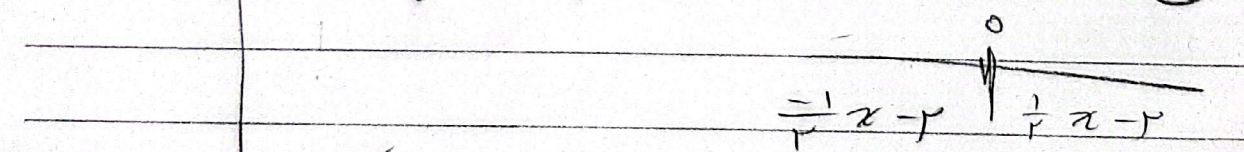
$$\alpha + \beta = r \quad r\alpha \leq 1 \quad \alpha \leq \frac{1}{r}$$

$$\alpha - \beta \leq -r$$

$$f(x) = (x+1)^{-1} - 14x^0 + (x-4)^1$$



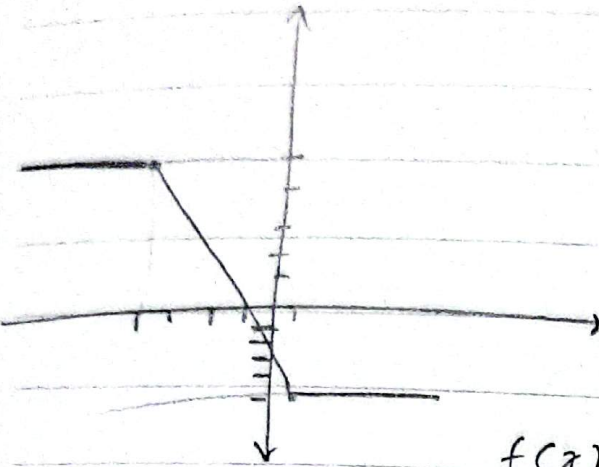
$$y = \left| \frac{1}{r} x \right| - r$$



$$\frac{1}{2} x^2 + 1/2 x - \frac{1}{2}$$

عبدالمجید
سید Espadana

$$\text{الف} \rightarrow [1-x + -|x+2|]$$



$$\omega \quad \begin{array}{c} -2 \quad 1 \\ | -x-2 | \end{array}$$

(9)

$$-\omega < 1-x - |x+2| < \omega$$

$$[1-x - |x+2|]$$

$$R_f = \{ \pm \omega, \pm \varepsilon, \pm 2, \pm 1, \pm 0 \}$$

$$f(x) = \frac{1}{x} - \left[\frac{x+1}{x} \right] \quad (-)$$

$$= \frac{1}{x} - \left[\frac{1}{x} \right] + 1$$

$$0 < x < 1 \rightarrow 1 < x+1 < 2$$

$$R_f = (1, 2)$$

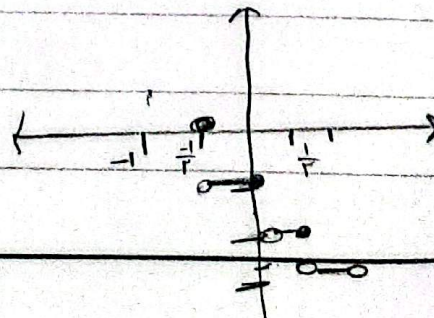
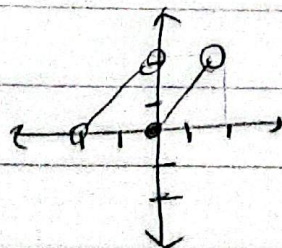
$$g = [-2x] - 1 \quad \text{الف (10)}$$

$$1) -1 < x \leq \frac{-1}{2} \rightarrow 1 < -2x \leq 2 \rightarrow [-2x] \in 1, y \in 0$$

$$2) \frac{-1}{2} < x < 0 \rightarrow 0 < -2x < 1 \rightarrow [-2x] \in 0, y \in -1$$

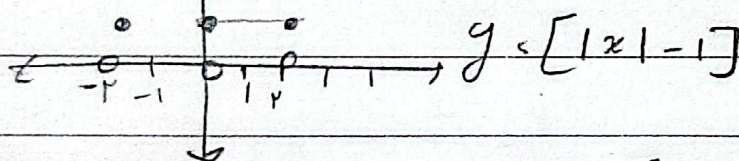
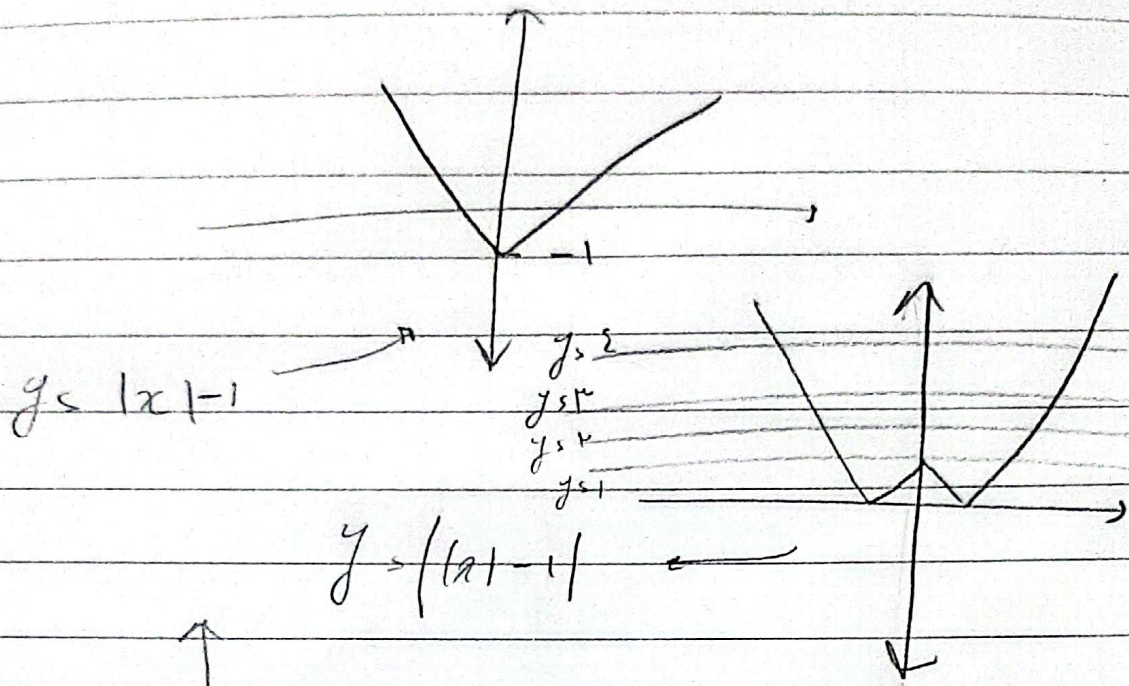
$$3) 0 < x \leq \frac{1}{2} \rightarrow -1 < -2x < 0 \rightarrow [-2x] \in -1, y \in -2$$

$$4) \frac{1}{2} < x < 1 \rightarrow -2 < -2x < -1 \rightarrow [-2x] \in -2, y \in -3$$

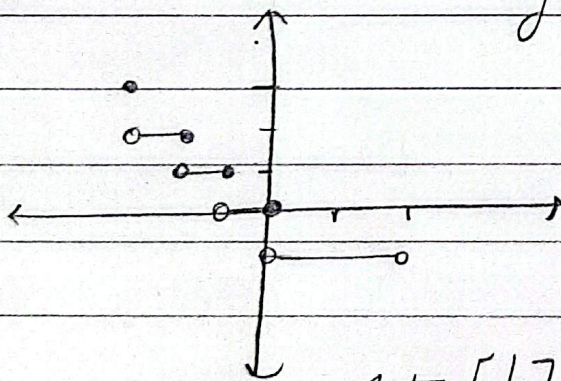


Espadana

iii) $y = [|x| - 1]$ $x \in [-2, 2]$ (A)



$y = [x^2 - 2x]$ $x \in [-1, 2]$



$x \leq +1$ $y \leq -1$ (9)

$a + [b] \in \mathbb{R}/\mathbb{Z}$ $[a] \leq m$ $a \leq m + 0.5$

$b - [a] \in \mathbb{R}/\mathbb{Z}$ $[b] \leq n$ $b \leq n + 0.5$

$\Rightarrow m + 0.5 + n \leq 1.5$ $m + n \leq 1$

$\Rightarrow n + 0.5 - m \leq 1.5$ $n - m \leq 1$

$m \leq 1$ $n \leq 1$

Espadana $b \leq 1.5$ $a \leq 1.5$

$\hookrightarrow a + b \in \mathbb{R}/\mathbb{Z} + 1/\mathbb{Z} \in \mathbb{R}/\mathbb{Z}$

$$1 - \sqrt{2} < 0 \rightarrow (1 - \sqrt{2})^4 > 0$$

(10)

$$(1 + \sqrt{2})^4 \leq 198 - (1 - \sqrt{2})^4 \rightarrow$$

$$-1 < 1 - \sqrt{2} < 0 \rightarrow, -1 < (1 - \sqrt{2})^4 < 0 \rightarrow$$

$$196 < (1 + \sqrt{2})^2 < 198 \rightarrow$$

$$[(1 + \sqrt{2})^4] \leq 196 \text{ منقسم}$$