

پارامیٹر نی زیادہ ، معادله درخت B ، تکلیف ستار ۳
۱۹۷۵ آنہیں صوبہ نوشتہ

$$x^2 + x + 2 = yx - y \rightarrow x^2 + (1-y)x + (2+y) = 0 \quad (1)$$

(۲)

$$x = \frac{y-1 \pm \sqrt{(1-y)^2 - 4(2+y)}}{2} \rightarrow \geq 0$$

$$y^2 - 4y - 7 \geq 0 \quad (y-7)(y+1) \geq 0 \quad \frac{-1}{+} \quad \frac{7}{+}$$

$$R_f = (-\infty, -1] \cup [7, +\infty) \quad \checkmark$$

$$2x^2 - 8x + 1 \xrightarrow{a>0} \min = \left(\frac{8}{2}, \frac{-14}{4} \right) \quad (۲) \text{ الف}$$

$$R_f = \left[-\frac{14}{4}, +\infty \right) \quad \checkmark \quad (۲)$$

$$-x^2 + 4x - 3 \xrightarrow{a<0} \max (4, 5)$$

$$R_f = (-\infty, 5] \quad \sqrt{-x^2 + 4x - 3} \rightarrow R_f = [0, 2] \quad \checkmark \quad (۲) \text{ ب}$$

$$x^2 - 2x^2 + 5x + 1 \rightarrow \geq R$$

$$\sqrt{x^2 - 2x^2 + 5x + 1} \rightarrow R_f = [0, +\infty) \quad \checkmark \quad (۲) \text{ ج}$$

$$x^2 - 4x^2 + 7x + 6 \rightarrow \geq \mathbb{R}$$

$$x^2 - 4x^2 + 7x + 6 > 0 \rightarrow \text{ایک } x^2 - 4x^2 + 7x + 6$$

$$\rightarrow R_f = \mathbb{R} \quad \checkmark \quad (۲) \text{ د}$$

$$\text{نیسا افق} \rightarrow R_f = \mathbb{R} - \text{تابع گرافیکی}$$

$$y = \frac{3x+1}{2x-4} \rightarrow R_f = \mathbb{R} - \left\{ \frac{3}{2} \right\} \quad \checkmark$$

$$\sqrt{\frac{5x+1}{x-2}} \rightarrow R_f = [0, +\infty) - \{2\} \quad \checkmark \quad \text{ب}$$

ج

$$\frac{x^2 + \sqrt{x} + 1}{\sqrt{x^2 + \sqrt{x}}} = \sqrt{x^2 + \sqrt{x}} + \frac{1}{\sqrt{x^2 + \sqrt{x}}}$$

$$\sqrt{x^2 + \sqrt{x}} > 0 \rightarrow \sqrt{x^2 + \sqrt{x}} = [\sqrt{x}, +\infty)$$

$$\sqrt{x} + \frac{1}{\sqrt{x}} = \frac{\epsilon \sqrt{x}}{x} \Rightarrow R_f = \left[\frac{\epsilon \sqrt{x}}{x}, +\infty \right)$$

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

$$x^2 + \epsilon > 0 \rightarrow x^2 + \epsilon = [\epsilon, +\infty)$$

$$R_f = \left[\frac{1}{\epsilon}, +\infty \right)$$

(ع) روش اصلی ←

$$x^2 + \epsilon = y x^2 - y$$

$$(x^2 - y) x^2 = -(\epsilon + y) \rightarrow x^2 = \frac{\epsilon + y}{y - x^2} \quad x = \pm \sqrt{\frac{\epsilon + y}{y - x^2}}$$

$$\frac{-\epsilon}{+ \epsilon} - \frac{x^2}{\epsilon} +$$

$$R_f = (-\infty, -\epsilon] \cup (x^2, +\infty)$$

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

$$x^2 = [0, +\infty)$$

تذکره ←

$$x^2 = 0 \rightarrow y = -\epsilon \quad x^2 = +\infty \rightarrow y = x^2$$

$$\text{مخرج صفری ندارد} \rightarrow (-\infty, -\epsilon] \cup (x^2, +\infty)$$

(د) روش اصلی

$$x \sin x - 1 = y \sin x + x y$$

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

$$\begin{cases} \frac{x y + 1}{x - y} \geq -1 \rightarrow \frac{x y + x}{x - y} \geq 0 \rightarrow \frac{-\frac{x}{x} + \frac{x}{x}}{-\frac{1}{x} + \frac{1}{x}} \rightarrow \left[-\frac{x}{x}, x \right) \\ \frac{x y + 1}{x - y} \leq 1 \rightarrow \frac{\epsilon y - 1}{x - y} \leq 0 \rightarrow \frac{\frac{1}{x} - \frac{1}{x}}{-\frac{1}{x} + \frac{1}{x}} \rightarrow (-\infty, \frac{1}{x}] \cup (x, \infty) \end{cases}$$

$$I \cap II \rightarrow R_f = \left[-\frac{x}{x}, \frac{1}{x} \right)$$

$$\sin x \begin{cases} -1 \rightarrow y = -\frac{x}{x} \\ +1 \rightarrow y = \frac{1}{x} \end{cases}$$

$$\text{مخرج} \neq 0 \rightarrow R_f = \left[-\frac{x}{x}, \frac{1}{x} \right)$$

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

(4)

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

(2)

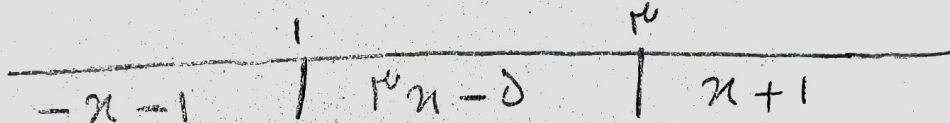
$$x = \frac{(1-y) \pm \sqrt{(y-1)^2 - (\varepsilon - \varepsilon y)(\frac{1}{\varepsilon} - y)}}{2(1-y)} \geq 0$$

$$y^2 - 2y + 1 - \varepsilon y^2 + \varepsilon y - 1 = -2y^2 + 2y \geq 0 \quad \frac{0}{-} \frac{1}{+} \frac{1}{-}$$

$$\Rightarrow y = [0, 1] \quad \text{عقار } \neq 0 \rightarrow y \neq 1$$

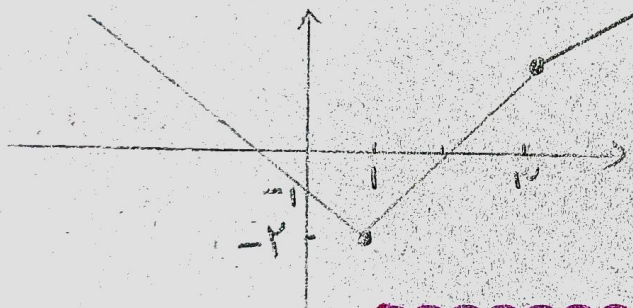
$$R_f = [0, 1) \quad \checkmark, \quad x^2 - x + 1 \neq 0 \quad \Delta < 0 \quad \checkmark \Rightarrow D_f = \mathbb{R}$$

عوارض برقرار



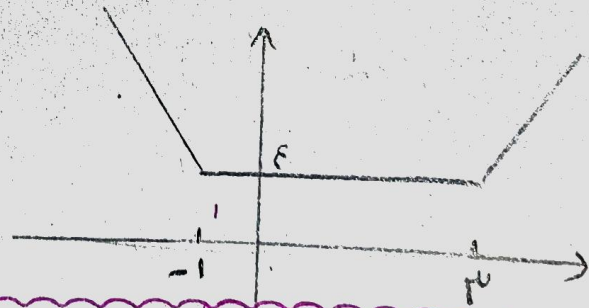
(17)

الف (2)

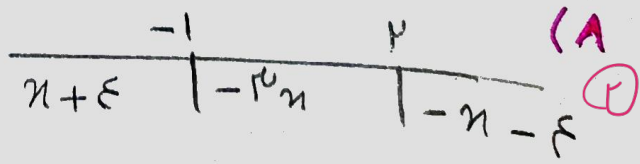
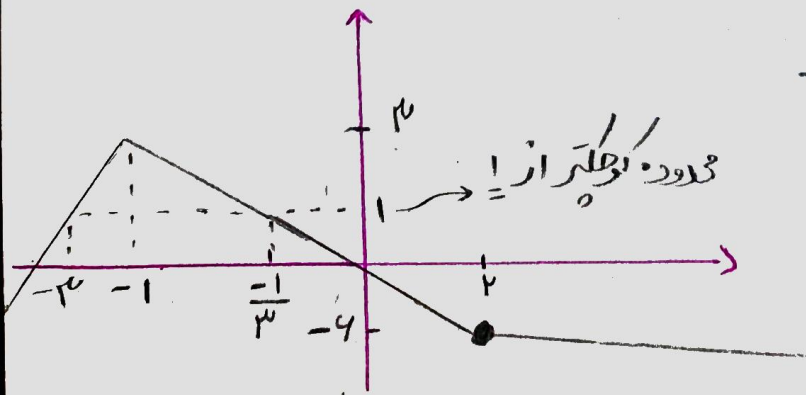


$$\Rightarrow R_f = [-2, +\infty) \quad \checkmark$$

$$R_f = [\varepsilon, +\infty) \quad \checkmark \quad \Leftarrow \text{تابع قطعی}$$



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(18)

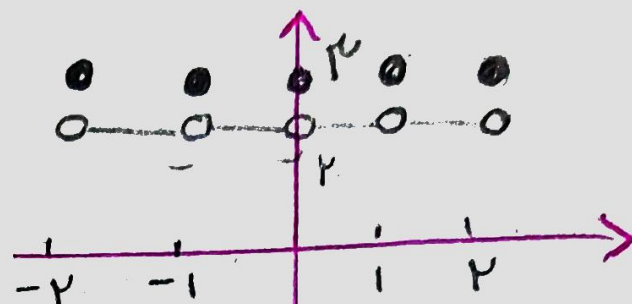
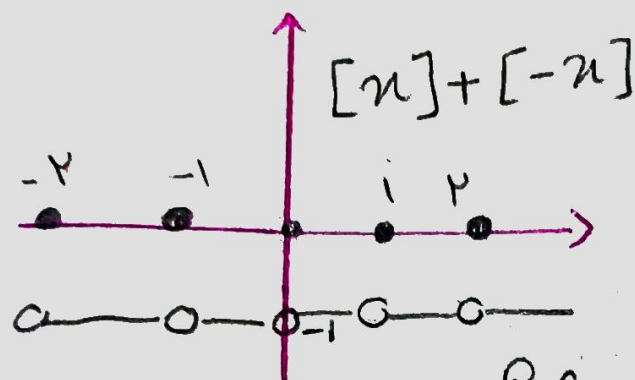
جواب

$$(-\infty, -2] \cup [-\frac{1}{2}, +\infty) \quad \checkmark$$

$$[n] + [\infty - n] = [n] + [-n] + \mu$$

الف (9)

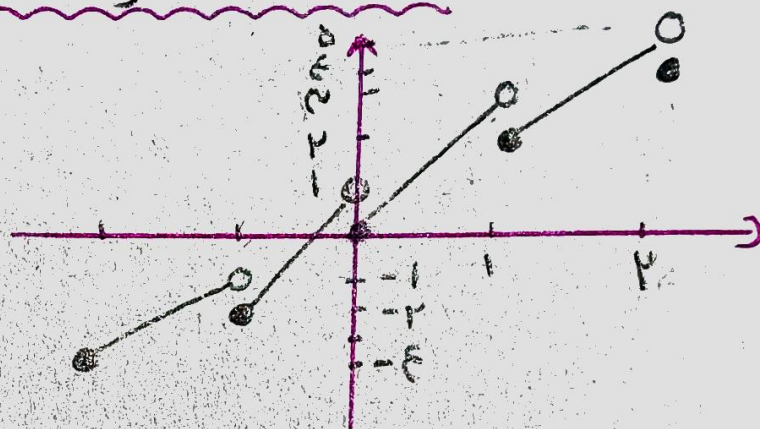
(1, 2, 5)



$$R_f = \{1, \mu\}$$

$$\begin{cases} [-2, -1) \rightarrow \mu n + 1 \\ [-1, 0) \rightarrow \mu n + 1 \\ [0, 1) \rightarrow \mu n \\ [1, 2) \rightarrow \mu n - 1 \end{cases}$$

$$R_y = [-2, 2)$$



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$$y = \sin^2 x - \sin x + 1 \quad \begin{cases} \sin x = -1 \rightarrow \mu \\ \sin x = 1 \rightarrow 1 \\ \sin x = \frac{1}{2} \rightarrow \mu \\ \sin x = -\frac{1}{2} \rightarrow \mu \end{cases}$$

الف (10)

$$R_f = \left[\frac{\mu}{2}, \infty\right]$$

$$y = \sin^2 x + \sin^2 x + 1 \quad \begin{cases} \sin^2 x = 0 \rightarrow 1 \\ \sin^2 x = 1 \rightarrow \mu \\ \sin^2 x = -\frac{1}{2} \rightarrow \text{عائق} \end{cases}$$

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

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