

الف) $y = x^3 - 3x^2 + 3x - 1 + 1 \rightarrow x^3 - 3x^2 + 3x - 1 + 1$ ← سوال

$\rightarrow y = (x-1)^3 + 1 \rightarrow y-1 = (x-1)^3 \rightarrow \sqrt[3]{y-1} = x-1$ (5)

$\rightarrow \sqrt[3]{y-1} + 1 = x \rightarrow Rf: R$

ب) $y = \frac{1}{x^2 - 2x} \rightarrow yx^2 - 2yx - 1$

$\rightarrow yx^2 - 2yx - 1 = 0 \rightarrow \frac{\Delta}{y^2} \geq 0 \rightarrow 4y^2 + 4y$

$\rightarrow 4y(y+1) \xrightarrow{\text{نقش علامت}} \begin{array}{c} -1 \quad 0 \\ + \quad - \quad + \end{array} \rightarrow Rf = (-\infty, -1] \cup [0, +\infty)$

$y = x^2 - 2x + 1$ سوال 2
 $y \mid x = \frac{-b}{2a} = \frac{2}{2} = 1$
 $y = (1)^2 - 2(1) + 1 = 0$ (5)

$\rightarrow Rf = [0, +\infty)$

$y = -x^2 + 4x + 3$ $y \mid x = \frac{-b}{2a} = \frac{-4}{-2} = 2$
 $-(2)^2 + 4(2) + 3 = -4 + 8 + 3 = 7$

$\rightarrow Rf = (-\infty, 7]$

$y = \sqrt{x^2 - 2x - 3}$ $y \mid x = \frac{-b}{2a} = \frac{1}{1} = 1$
 $(1)^2 - 2(1) - 3 = 1 - 2 - 3 = -4$

$[-4, +\infty) \xrightarrow{\sqrt{\cdot}} [0, +\infty)$

$y = \sqrt{4x - x^2} \rightarrow y \mid x = \frac{-b}{2a} = \frac{2}{-1} = -2$
 $y = \sqrt{4(-2) - (-2)^2} = \sqrt{-8 - 4} = \sqrt{-12}$

$(-\infty, 4] \xrightarrow{\sqrt{\cdot}} [0, 2]$

سوال 5 ←

5

ا) $y = x^3 - 6x^2 + 2x + 1 \rightarrow R_f, R$

ب) $y = x^5 - 4x^2 + 3x + 2 \rightarrow R_f, R$

ج) $y = \sqrt{x^5 - 4x^2 + 2x + 1} \rightarrow R_f, [0, +\infty)$

د) $y = (x^5 - 4x^2 + 2x + 1)^2 \rightarrow R_f, [0, +\infty)$

سوال 6 ←

5

ا) $\frac{3x+1}{x-2} \rightarrow R - \left\{ \frac{a}{c} \right\} \rightarrow R - \{3\}$

ب) $\frac{2x+1}{x+1} \rightarrow R - \left\{ \frac{a}{c} \right\} \rightarrow R - \{2\}$

ا) $y = \sqrt{\frac{2x+1}{x+1}} \rightarrow R - \left\{ \frac{a}{c} \right\} \rightarrow R - \{2\}$

5

$\rightarrow R_f, [0, +\infty) - \sqrt{2}$

ب) $y = \sqrt{\frac{3x+1}{2-x}} \rightarrow \sqrt{\frac{3x+1}{-x+2}} \rightarrow R - \left\{ \frac{a}{c} \right\} \rightarrow R - \{-3\}$

لے زیر ماریکل قبول نیست

$\rightarrow R_f, [0, +\infty)$

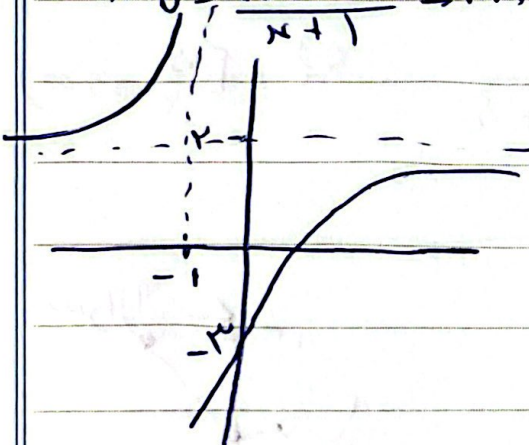
سوال 7 ←

5

ا) $y = \frac{2x-3}{x+1} \rightarrow R_f, R - \{2\}$

جانب فوقی = -1

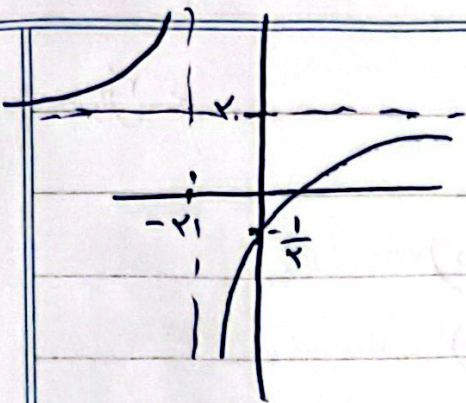
جانب سفلی = 2



ب) $y = \frac{2x-1}{x+2} \rightarrow R_f, R - \{2\}$

جانب فوقی = -2

جانب سفلی = 2



ا) $y = \sin x + \frac{1}{\sin x} \rightarrow \text{Rf} = (-\infty, -1] \cup [1, +\infty) \leftarrow \text{سوال 5}$

ب) $y = \frac{x^2+1}{x^2} \rightarrow x^2 + \frac{1}{x^2} \rightarrow (-\infty, -1] \cup [1, +\infty) \quad 5$

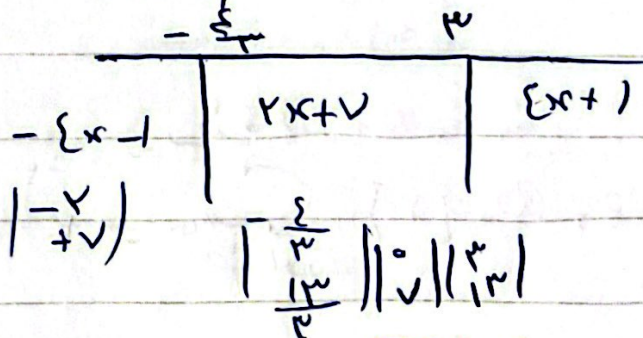
ج) $y = \frac{\sqrt[3]{x^2} + 1}{\sqrt[3]{x}} \rightarrow \sqrt[3]{x} + \frac{1}{\sqrt[3]{x}} \rightarrow (-\infty, -1] \cup [1, +\infty)$

د) $y = \sqrt{x} + \frac{1}{\sqrt{x}} \rightarrow [1, +\infty)$

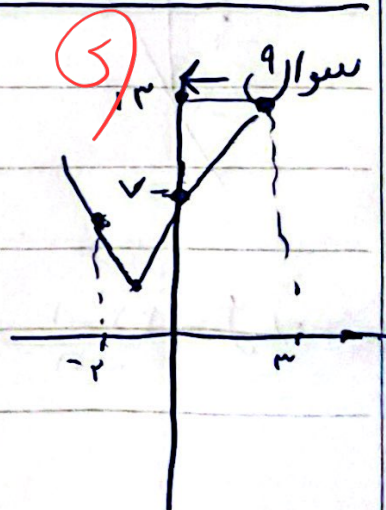
ا) $y = x^2 + \frac{1}{x^2+3} \rightarrow x^2+3 + \frac{1}{x^2+3} - 3 \leftarrow \text{سوال 5}$
 $\rightarrow \text{Rf} = [\frac{1}{3}, +\infty)$

ب) $y = \frac{x^2+d}{\sqrt{x^2+e}} \rightarrow \sqrt{x^2+e} + \frac{1}{\sqrt{x^2+e}} \rightarrow \text{Rf} = [\frac{d}{e}, +\infty)$

$y = |x-3| + |x+1|$

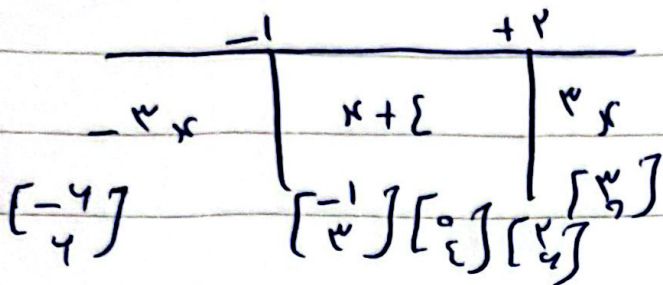


Scb6

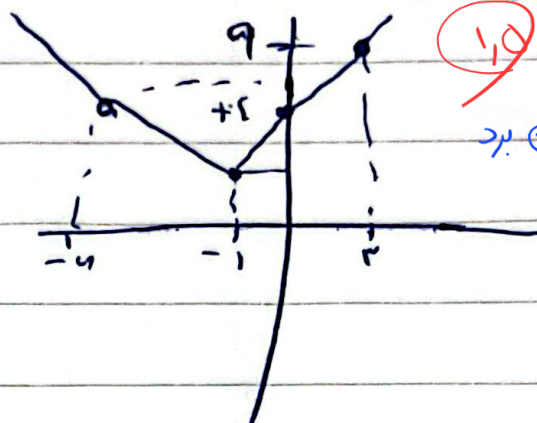


الف) $|x-2| + |2x+2|$

سوال ←

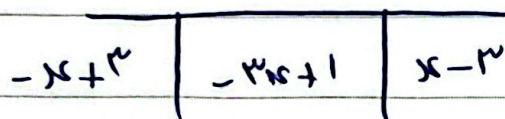


$R = [2, +\infty)$



نوشته برد

ب) $y = |x-2| - |x+1|$



$R = [-2, +\infty)$

