

(تکلیف شماره ۶)

۱۸، ۷۵

< نقطه شگرنی >

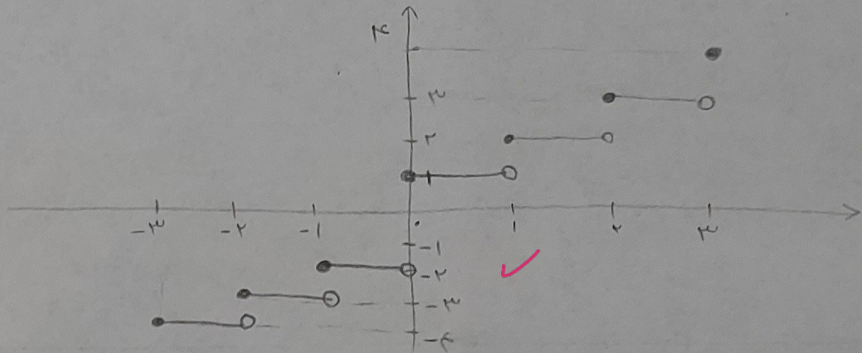
< معادله دفتر B >

الف) $f(x) = 2 \sin^2(x + \frac{\pi}{4}) - 1 \rightarrow R_f = [-1, 1]$

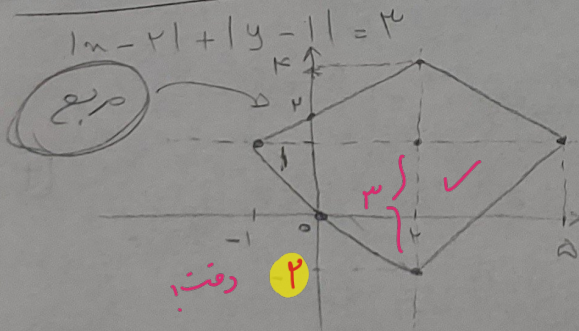
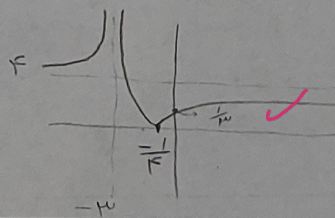
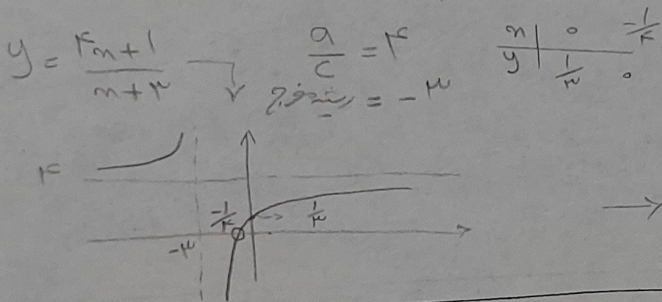
ب) $g(x) = 3 \cos^2 x - 4 \rightarrow R_g = [-4, 3]$

$y = \frac{x}{|x|} + [x]$

$-3 \leq x < -2 \rightarrow -1 + (-3) = -4$
 $-2 \leq x < -1 \rightarrow -1 + (-2) = -3$
 $-1 \leq x < 0 \rightarrow -1 + (-1) = -2$
 $0 \leq x < 1 \rightarrow -1 + 0 = -1$
 $1 \leq x < 2 \rightarrow 1 + 1 = 2$
 $2 \leq x < 3 \rightarrow 1 + 2 = 3$
 $x = 3 \rightarrow 1 + 3 = 4$



$y = \left| \frac{x+1}{x+3} \right|$



$y \geq 1 \rightarrow x - 2 + y - 1 = 3$
 $y \geq 2 \rightarrow y = -x + 6$

$y \geq 1 \rightarrow 2 - x + y - 1 = 3$
 $y \leq 2 \rightarrow y = x + 2$

$y \leq 1 \rightarrow x - 2 + 1 - y = 3$
 $y \geq 2 \rightarrow y = x - 4$

$y \leq 1 \rightarrow 2 - x + 1 - y = 3$
 $y \leq 2 \rightarrow -x - y = 3$

$x + \frac{1}{x} \rightarrow R_f = [1, +\infty)$

الف) $f(x) = x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}}$
 $R = [1, +\infty)$
 $R = [\sqrt{2}, +\infty)$
 $R = [2\sqrt{2}, +\infty)$

$R_f = [2\sqrt{2} + 2, +\infty)$

صفحه آخر...

صفت ب؟

$$f(x) = \frac{-1}{x}x + 10 = \frac{-x + 10}{x}$$

$$D = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

$$R_f = \left\{ \frac{19}{9}, \frac{18}{8}, \frac{17}{7}, \frac{16}{6}, \frac{15}{5}, \frac{14}{4}, \frac{13}{3}, \frac{12}{2}, \frac{11}{1} \right\}$$

$$E_{\text{مجموعه}} = \frac{9 \left(\frac{19}{9} + \frac{11}{1} \right)}{9} = 10 \checkmark$$

(2)

(9)

$$f(x) = \sqrt{ax^2 + bx + c}$$

$$D_f = [1, +\infty)$$

$a=0$ ، طبق قانون، باید $a \geq 0$ باشد، پس $a=0$ صحیح است.

$$f(x) = \sqrt{bx + c}$$

$$\begin{cases} x=1, & \sqrt{1b+c} = 0 \rightarrow 1b+c=0 \\ x=2, & \sqrt{2b+c} = 1 \rightarrow 2b+c=1 \end{cases}$$

$$\rightarrow \sqrt{3b+c} = 1 \rightarrow 3b+c=1$$

(2)

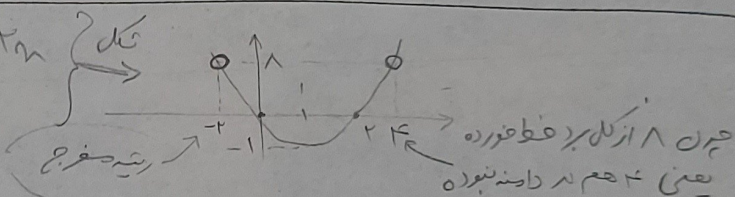
(5)

$$g(x) = \sqrt{bx^2 + ax - 2c} = \sqrt{x^2 + 1}$$

$$\frac{-b}{2a} = 0 \rightarrow y_{\min} = 1$$

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

$$f(x) = \frac{x^3 - 2x}{x+2} = \frac{x(x-2)(x+2)}{x+2} = x^2 - 2x$$



$$D = \mathbb{R} - \{a, b\} = \mathbb{R} - \{-1, 1\}$$

$$R_f = [0, +\infty) - \{1\} = [-1, +\infty) - \{1\}$$

$$\begin{cases} a = -1 \\ b = 1 \\ c = -1 \end{cases}$$

$$f\left(\frac{-1+1}{-1}\right) = f(-1) = (-1)^2 - 2(-1) = 3 \checkmark$$

(2)

(8)

$$y = \sqrt[3]{(x-2)^3} = \sqrt[3]{x^3 - 9x^2 + 12x - 8} = x - 2$$

$$a = -9 \quad b = 12$$

(2)

$$D_f = [a, b] = [-8, 12]$$

$$R_f = [-1, 10]$$

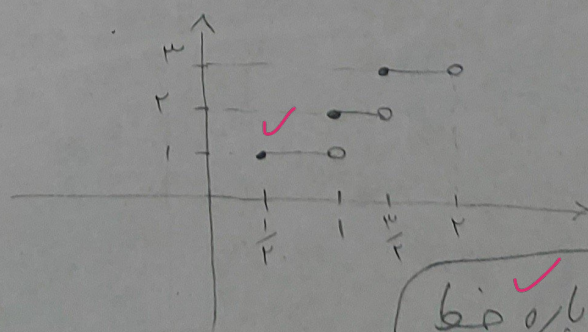
(6)

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

$$\frac{1}{x} < x < 1 \rightarrow 0 + 1 = 1$$

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

$$\frac{1}{x} < x < 2 \rightarrow 1 + 2 = 3$$



$$b \leq x \leq \frac{1}{b}$$

(2)

(10)

$$\text{بـ)} y = (r - \sin u)(1 + \sin u) = -\sin^2 u + \boxed{\sin u} + r$$

- ٢

$$\begin{cases} \sin u = -1 \rightarrow y = 0 \\ \sin u = 1 \rightarrow y = r \\ \sin u = \frac{-b}{r_u} = 1 \rightarrow y = r \end{cases} \Rightarrow R_f = [0, r]$$