

الف) $f(x) = 2 \sin^2(x + \frac{\pi}{2}) - 1$ $\xrightarrow{-\frac{b}{2a} = \sin = 0} f(x) = -1$ $\Rightarrow R_f = [-1, 1]$ (سوال ۱) (۲)

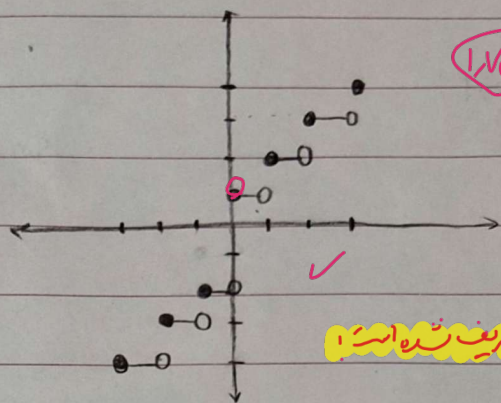
$\xrightarrow{\sin = 1} f(x) = 2 \cdot 1 - 1 = 1$

ب) $g(x) = 2 \cos^2 x - 4$ $\xrightarrow{\cos = 1} g(x) = 2 - 4 = -2$ $\Rightarrow R_g = [-2, 2]$

$\xrightarrow{\cos = -1} g(x) = 2 - 4 = -2$

$\frac{x}{|x|} + [x]$ $[2, 3]$ $\xrightarrow{x \geq 0} [x] + 1$

$\xrightarrow{x < 0} [x] - 1$



صفر تعریف شده است!

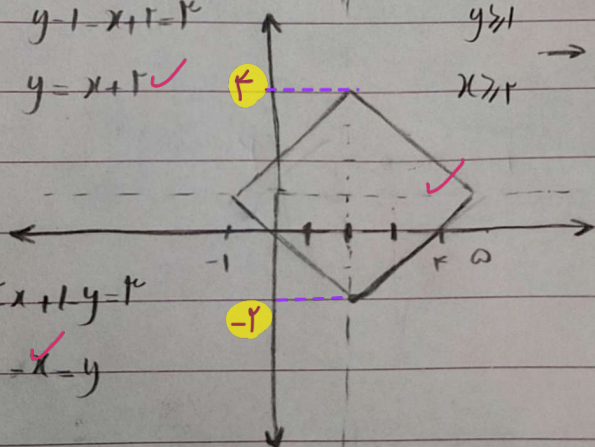
$|x-2| + |y-1| = 3$

$y \geq 1$ $y-1-x+2=3 \Rightarrow y=x+2$

$x \leq 2 \Rightarrow y=x+2$

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

$x \geq 2 \Rightarrow y=-x+6$



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

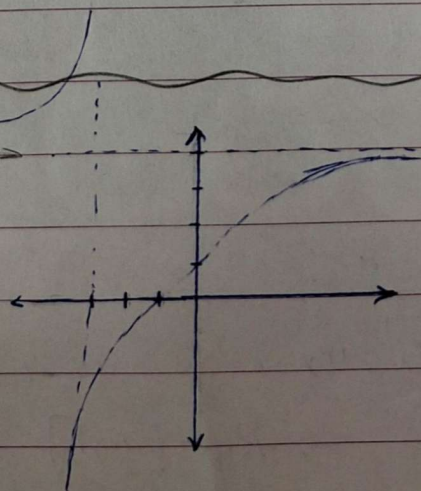
$y \leq 1 \Rightarrow y=x-2$

$x-2-y+1=3 \Rightarrow y=x-4$

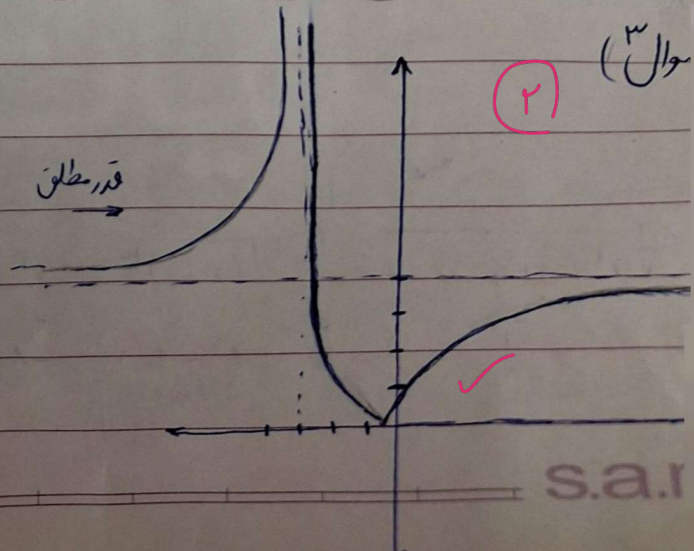
$y \leq 1$ $x \geq 2 \Rightarrow y=x-4$

$y = \left| \frac{x+1}{x+2} \right|$

$x = -2 \rightarrow \frac{-1}{1}$



فرد و مطلق



Subject:

$$r < x + \frac{1}{x} < +\infty$$

الف) $f(x) = x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}}$ سوال (۲)

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

$$y = (r - \sin x)(1 + \sin x) = -\sin^2 x + r \sin x + r$$

$$\sin = 1 \rightarrow -1 + r + r = F$$

$$\sin = -1 \rightarrow -1 - r + r = 0$$

$$R_y = [0, F]$$

$$\sin = \frac{-b}{r_a} = \frac{-r}{-r} = 1 \rightarrow F$$

$$f(x) = -\frac{1}{r}x + 10 \rightarrow \text{در } x=9 \text{ : } f(9) = -\frac{1}{r}(1+r+r+9) + 10 \times 9 = -10 + 90 = \frac{80}{r}$$

$$f(x) = \sqrt{ax^r + bx + c} \rightarrow a=0 \rightarrow f(x) = \sqrt{bx + c} \begin{cases} x=r \rightarrow \sqrt{rb+c}=0 \rightarrow rb+c=0 \\ x=r \rightarrow \sqrt{rb+c}=1 \rightarrow rb+c=1 \end{cases}$$

$$g(x) = \sqrt{bx^r + ax + c} = \sqrt{rx + r} \rightarrow R_g = [-r, +\infty)$$

$$f(x) = \frac{x^r - rx}{x+r} \rightarrow x+r \rightarrow \frac{x(x-r)(x+r)}{x+r} = x^r - rx$$

$$D_f = R - \{a, b\} \rightarrow a = -r \quad b = +r$$

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

$$\min \begin{cases} \frac{b}{ra} \\ -\frac{\Delta}{ra} = -1 \end{cases}$$

$$\Rightarrow f\left(\frac{-r+r}{-r}\right) = f(-1) = \frac{r}{r}$$

$$y = \sqrt[3]{x^r + ax^r + bx - 1} = \sqrt[3]{(x-r)^r} \rightarrow x^r - rx^r + rx - 1 \quad a = -4 \quad b = 12$$

$$D_g = [-4, 12] \rightarrow x = -4 \rightarrow f(-4) = -1 \rightarrow R_g = [-1, 10]$$

s.a.m

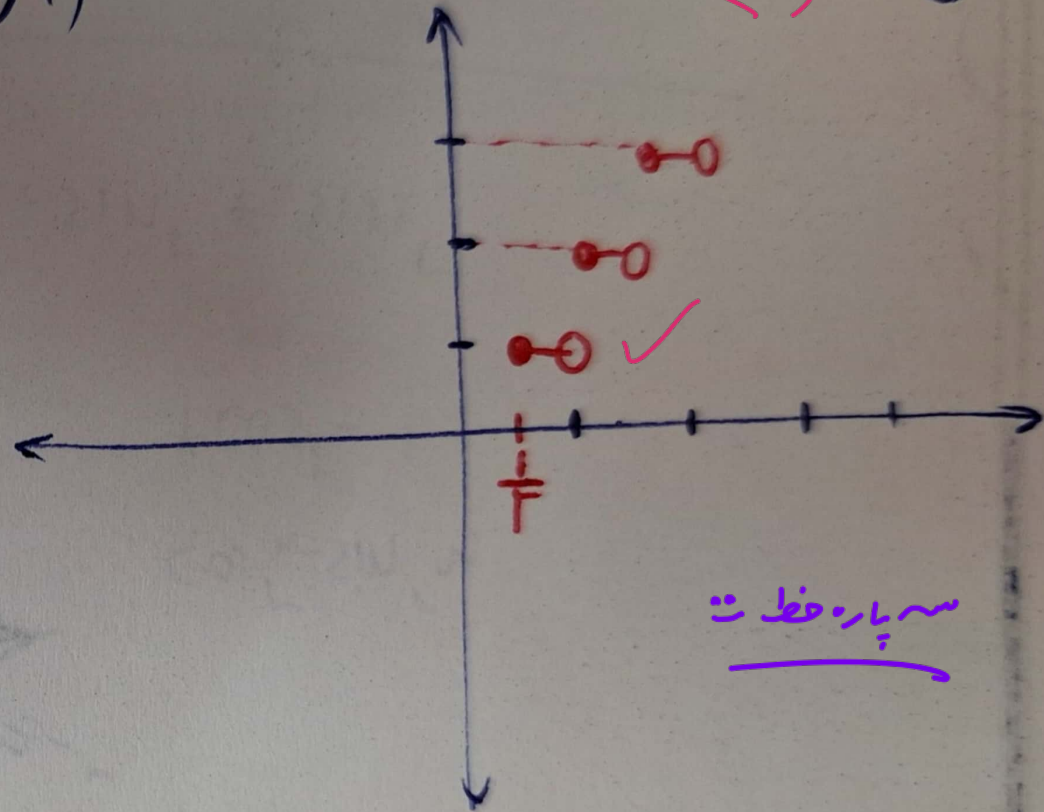
$$y = [x] + \left[x + \frac{1}{2}\right] \quad , \quad \left[\frac{1}{2}, 2\right)$$

سوال ۱ (۱, ۷۵)

$$\left[\frac{1}{2}, 1\right) \Rightarrow 0 + 1 = 1$$

$$\left[1, \frac{3}{2}\right) \Rightarrow 1 + 1 = 2$$

$$\left[\frac{3}{2}, \frac{5}{2}\right) \Rightarrow 1 + 2 = 3$$



سه پاره خط

۷- با توجه به دامنه، زیر رادیکال یک خط با شیب مثبت بوده یعنی $a=0$ است و نقطه $(2,0)$ هم در معادله خط صدق میکند...

$$\begin{cases} (2,0) \rightarrow 2b+c=0 \\ (3,1) \rightarrow 3b+c=1 \end{cases} \rightarrow b=1, c=-2$$

$$g(x) = \sqrt{x^2+4} \rightarrow \text{ext} \Big|_4^0 \Rightarrow R_g = \sqrt{[4, +\infty)} = [2, +\infty)$$