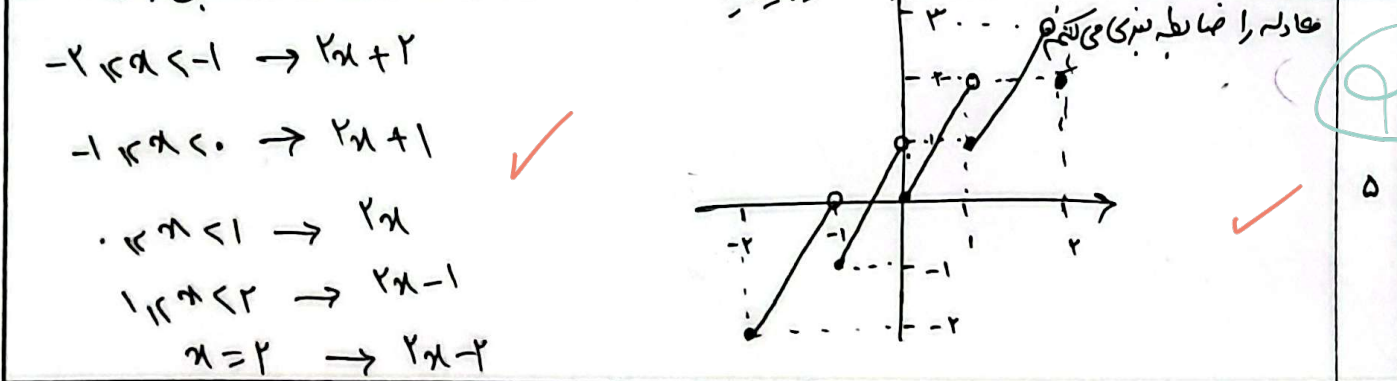


۱. $f(x) = \{ \}$ عبارت $\rightarrow f(x) = x^2 + 2x + 1 + 9x^2 - 4x + 1 + m^2 x^2 + nx + mn$
 $\hookrightarrow (10+m)x^2 + (n-4)x + 2+mn \rightarrow \begin{matrix} m=-10 \\ n=4 \end{matrix} f(x) = -38$
 نامردی تابع زوج متبناوات که به ازای مولفه اول برابر مولفه دوم برابر نیز باشد. با جایگذاری m, n می‌آید:
 $m+n+p+k = 10+4-11+10 = 14$
 $p+1=-10 \rightarrow p=-11$ $-1=k-11 \rightarrow k=10$ $\rightarrow$ جواب $\rightarrow -11$

۲. $t^2 - 2t - 1 = 0 \rightarrow t = \frac{2 \pm \sqrt{4+4}}{2} = 1 \pm \sqrt{2}$
 $x^2 = t \rightarrow x = \pm \sqrt{1 \pm \sqrt{2}}$
 جواب $\rightarrow D_f = (-2, 2) \cup (2, +\infty)$
 $4-2[-x] = 0 \rightarrow [x] = 2 \rightarrow 2 \leq x < 3$
 $\rightarrow D_f = R - \{ \}$ $D_f = R - (-3, -2]$ $\rightarrow$ جواب $\rightarrow -2, 3$

۳. $f(x) = \frac{x(x^2-1)}{\sqrt{|x|+x}} \rightarrow x(x^2-1) \gg \frac{-1}{-1} + \frac{0}{0} - \frac{1}{-1} = 1$
 $\sqrt{|x|+x} \rightarrow |x|+x > 0 \rightarrow |x| > -x \rightarrow$ اعداد صحیح $\rightarrow D_f = [1, +\infty)$
 $f(x) = \frac{|x-2|-x^2}{|x|-1} \rightarrow |x-2|-x^2 \gg |x-2| > x^2$
 $\rightarrow x > 2 \rightarrow x^2 - x + 2 < 0 \rightarrow \emptyset$
 $\rightarrow x < 2 \rightarrow x^2 + x - 2 < 0$
 $\rightarrow x < -2$ $\rightarrow D_f = [-2, -1) \cup (1, 2)$ $\rightarrow$ جواب $\rightarrow -2, 1$

۴. $||x-2|-1|-k=0 \rightarrow ||x-2|-1|=k$
 $\rightarrow \begin{cases} |x-2|-1=k \rightarrow |x-2|=k+1 \rightarrow x-2=k+1 \\ |x-2|-1=-k \rightarrow |x-2|=1-k \rightarrow x-2=1-k \end{cases} \rightarrow x = \begin{cases} k+3 \\ k+1 \\ 1-k \\ 3-k \end{cases}$
 if $3-k = k+1 \rightarrow k=1$ $\rightarrow$ جواب $\rightarrow$ اگر $1, 3, 2, 0$ را بزرگتر از ۱ قبول
 if $1-k = k+1 \rightarrow k=0$ $\rightarrow$ اگر $2, 0$ را بزرگتر از ۱ قبول



$$f(n) = \frac{(n-3)(n-1)}{n+a} + b$$

$f(n) = x$: جوابی

① if $\rightarrow a = -3 \sim b = +1 \Rightarrow \frac{(n-3)(n-1)}{n-3} + 1 = 1 \Rightarrow a-b = -3-1 = -4$

② if $\rightarrow a = -1 \sim b = +3 \Rightarrow \frac{(n-3)(n-1)}{n-1} + 3 = x \Rightarrow a-b = 3-1 = 2$

جواب $\rightarrow \boxed{5-4} \leftarrow a-b$ جوابی

$f(n) = g(n) \xrightarrow{n=0} f(0) = 2 \rightarrow 2 = 0 + c \rightarrow c = 2$
 $g(n) = 0 + c$
 $g(n) = n + 2$

$n=1 \rightarrow \frac{a+2}{1+b} = 3 \rightarrow a-3b = 1$
 $a = 2/5, b = 1/5$
 $b+c = 1/5 + 2 = 21/5$
 جواب $\rightarrow$

$n=-1 \rightarrow \frac{2-a}{b-1} = 1 \rightarrow (a+b=3) \times 3$
 $4a = 10 \rightarrow a = 21/5$

$D_f \cap D_g = \{1\}$
 $D_f \leftarrow \xrightarrow{b} D_g$
 $\frac{1}{2}a \leq \frac{b}{2}$

$f(n) = \sqrt{\epsilon n - 3a} + k - 1 \rightarrow \epsilon n - 3a \geq 0 \rightarrow n \geq \frac{3}{\epsilon}a \rightarrow a = \frac{\epsilon}{3}$
 جواب $\rightarrow$

$g(n) = \sqrt{b - \epsilon n} + 3k \rightarrow b - \epsilon n \geq 0 \rightarrow n \leq \frac{b}{\epsilon} \rightarrow b = \frac{\epsilon}{3}$

$2f-g(1) = k \rightarrow 2k - 2 - 3k = k \rightarrow k = -1$
 $3a - \frac{b}{\epsilon} - k \rightarrow 1 - 2 + 1 = 0$

$D_f \cap D_g = [-1, 5]$
 $D_f \leftarrow \xrightarrow{g} D_g$
 $-1 \leq m$

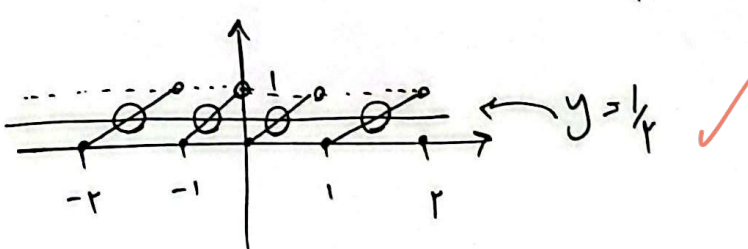
$f(n) = \sqrt{m-n} + n \rightarrow m-n \geq 0 \rightarrow n \leq m \rightarrow m = 5$

$m+n = 5 + 1\sqrt{2} - 2 = 1\sqrt{2} + 3$

$g(n) = \sqrt{2n+2} \rightarrow 2n+2 \geq 0 \rightarrow n \geq -1$

$f-g(2) = 4\sqrt{2} \rightarrow 2+n - 2\sqrt{2} = 4\sqrt{2} \rightarrow n = 1\sqrt{2} - 2$

$y = (-1)^n (n - [n]) = \frac{1}{2} \rightarrow n - [n] = \frac{1}{2}$



جواب بارن