

$$f(x) = (x+1)^r + (r(x-1))^r + mx^r + nx + mn$$

$$x^r + 9x^r + mx^r + rx - 9x + nx$$

$$10x^r + mx^r = 0 \quad m = -10$$

$$-rx + nx = 0 \quad n = r$$

$$f(x) = (x+1)^r + (r(x-1))^r - 10x^r + rx - 9x + rx$$

$$g(x) = \{ (t, -10), (t, r+1), (-9, -1), (-9, r+x) \}$$

$$r+1 = -10 \quad r = -11$$

$$-9, r+x = -1 \quad -9, -11+x = -1 \quad x = 10$$

$$n + m + p + k = -10 - 11 + 10 = -11$$

الف) $y = \sqrt{\frac{x-2}{x^2-2x^2-1}} \rightarrow \frac{x-2}{(x^2-2)(x^2+2)} \geq 0$
 (x+2)(x-2) $\oplus$ مواردة

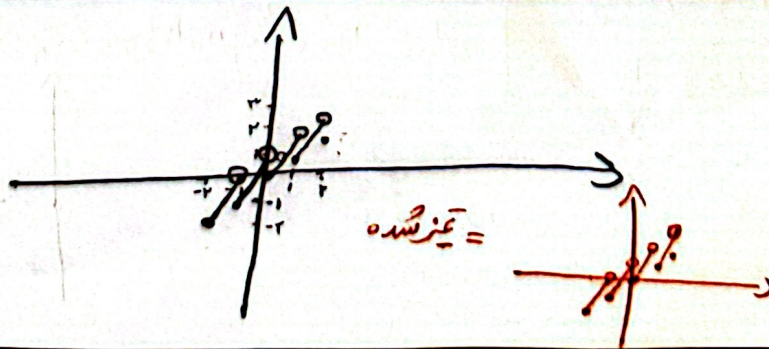
b) $y = \frac{rx^r + 1}{x - r[x]}$ $\neq r[x]$
If $r = [x] \rightarrow x = \cancel{(-r, -r)} \Rightarrow R - (-r, -r)$

الف) $\frac{\sqrt{x(x^2-1)}}{\sqrt{|x|+x}}$ I: $x(x-1)(x+1) \geq 0$ $\begin{array}{c} x^2-1 \\ -1 \quad 0 \quad 1 \\ - \quad + \quad - \quad + \end{array}$ $[-1,0] \cup [1,+\infty)$
II: $|x| > -x \Rightarrow D_f = \mathbb{R}^+ \quad I \cap II = [1,+\infty)$

ب) $\sqrt{|x-2|-x^2} \rightarrow \begin{matrix} x \geq 0 \rightarrow -x^2 + x - 2 \\ x < 0 \rightarrow -x^2 - x + 2 \end{matrix} \xrightarrow{\text{منفصله هواره}} \begin{matrix} I \\ -\phi + \phi \end{matrix} \rightarrow [2, 1]$
 $|x|-1 \rightarrow x \neq 1, -1$ I_I $I \cap I_I = \sqrt{[2, 1] - \{1, -1\}}$

$||x-2|-1| \neq k$
 $||x-2|-1| = k \rightarrow \begin{cases} |x-2| = k+1 \\ |x-2| = -k+1 \end{cases}$
 $\begin{cases} x = k+3 \\ x = -k+1 \end{cases} \rightarrow \begin{cases} k+3 = -k+1 \\ k = -1 \end{cases}$
 $k = -1 \rightarrow$ جوابی قدر مطابق صورتها نیست
 $\begin{cases} x = k+1 \\ x = -k+3 \end{cases} \rightarrow \begin{cases} k+1 = -k+3 \\ k = 1 \end{cases}$
 $k = 1 \rightarrow$ مقدارهای صحیح

$$\begin{aligned}[-2, -1) &= 2x + 2 \\ [-1, 0) &= 2x + 1 \\ [0, 1) &= 2x \\ [1, 2) &= 2x - 1 \\ \{2\} &= 2x - 2\end{aligned}$$



$\frac{x^2 - 4x + 3}{x + a} = \frac{(x-1)(x-3)}{x+a} \quad \textcircled{1} \rightarrow a = -3 \Rightarrow x-1+b=x \quad Df = R - \{3\}$ $b=1$ $\textcircled{2} a = -1 \Rightarrow x-3+b=x \quad Df = R - \{1\}$ $b=3$ نکته: عضو -4 مجموعه مقادیر ① $a-b = -4$ ② $a-b = -4$ بعضی موارد $y=x$	6
$x^2 + 2x - x - 2 = (x-1)(x^2 + 3x + 2) \quad \frac{(x-1)(x+1)(x+2)}{(x+1)(x-1)} = x+2$ بعضی موارد $x^2 - 1 = (x-1)(x+1)$ $g(x) = x+c \Rightarrow c=2$ $b+c = \frac{1}{2} + 2 = \boxed{2,5}$ If $x=1 \rightarrow \frac{a+2}{1+b} = 3 \Rightarrow a = 3b+1$ If $x=-1 \rightarrow \frac{-a+2}{-1+b} = 1 \Rightarrow -a+2 = -1+b \Rightarrow a = 3$ $-3b+1 = -1+b \Rightarrow -4b = -2 \Rightarrow b = \frac{1}{2}$	7
$yf - g = \{1, k\}$ $Df \cap Dg = \{1\}$ $b - 4x \geq 0 \Rightarrow \frac{b}{4} \geq x$ $x \geq \frac{3a}{4} \quad I \cap I \cap I = 1 = \frac{3a}{4} - \frac{b}{4}$ $\frac{b}{4} = \frac{3a}{4} \Rightarrow b = 3a \quad b=3 \quad a=1$ $2\sqrt{x-1} + 2k - 2 - \sqrt{x-1} - 3k = k$ $2k - 2 - 4k = -2k - 2 = 0 \Rightarrow k = -1$ $3a - \frac{b}{4} - k = 3 - \frac{3}{4} - (-1) = \boxed{3}$	8
$Df \cap g = [-1, v] \quad Dg = [-1, +\infty) \Rightarrow Df \cap Dg = [-1, v]$ $\Rightarrow Df = (-\infty, v]$ $x+2 \geq 0 \Rightarrow x \geq -1$ $m-x \geq 0 \Rightarrow m \geq x$ $m=v$ $g(3) = \sqrt{2(3)+2} = 2\sqrt{2}$ $f(4) = 1\sqrt{2}$ $\sqrt{v-2} + n = 1\sqrt{2} \Rightarrow n = 1\sqrt{2} - 2$ $m+n = 1\sqrt{2} - 2 + v = \boxed{1\sqrt{2} + 4}$	9
$y = (-1)^x (x - [x]) = \frac{1}{2}$ $x - [x] = \frac{1}{2}$ نقطه را قطع می کند نقطه را قطع می کند $[2, 1) \rightarrow -1, 1 \Rightarrow -1, 1 - (-2) = 0, 1$ $[-1, 0) \rightarrow -0, 1 \Rightarrow -0, 1 - (-1) = 0, 1$ $[0, 1) \rightarrow 0, 1 \Rightarrow 0, 1 - 0 = 0, 1$ $[1, 2) \rightarrow 1, 1 \Rightarrow 1, 1 - 1 = 0, 1$	10