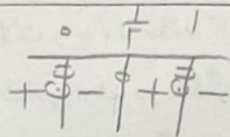


ب) $\frac{x^2 - 2x + 1 - x^2}{x^2 - x} \geq 0$



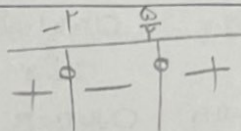
$D_f = (-\infty, 0) \cup [1, \infty)$

ج) $x \neq -1$
 $x \neq 0$
 $x \neq 1$
 $x \neq -2$
 $x \neq -\frac{5}{2}$

$\frac{x - 2x - 1}{x^2 + x} = \frac{(x-1)(x+2)(-x-1)}{x(x+1)(x+2)}$

$D_f = \mathbb{R} - \left\{-\frac{5}{2}, 0, -1, \pm 1\right\}$

د) $(x^2 - 9)(x^2 - 2x) \geq 0$



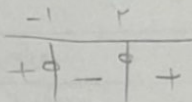
$D_f = (-\infty, -3] \cup [2, \infty)$

ه) $(\sqrt{y-1})^2 = (-\sqrt{x-1} + 4)^2 \rightarrow \sqrt{x-1} - 4\sqrt{x-1} + 16 = y-1$

$y = \sqrt{x-1} - 4\sqrt{x-1} + 16 \Rightarrow x-1 \geq 0 \Rightarrow x \geq 1$

$D_f = [1, \infty)$

$x^2 - x - 2 = (x-2)(x+1) \geq 0$

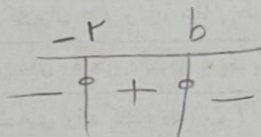


$\sqrt{x^2 - 1} \neq -1$

$x^2 - 1 \geq 0 \Rightarrow x \geq 1$
 $x \leq -1$

$D_f = (-\infty, -1) \cup (2, \infty)$

$x^2 + ax - x^2 \geq 0$



$(x+2)(x+b) = -x^2 + ax + 2$

$D_f = [-2, b]$

$-x^2 + (b-2)x + 2b = -x^2 + ax + 2$

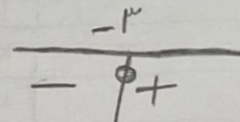
$b = \frac{2}{f}$

$a = -\frac{1}{f}$

$a + b = 1$

$f(x) \geq x$

$f(x) = \begin{cases} 2x-2 & x \geq 1 \\ 2x+2 & x < 1 \end{cases}$



$D_f = [-2, \infty)$

$$rf(a) = r(a+1)(v) = 1fa + 1f$$

$$f(-r) = ra - r$$

$$1fa + 1f = \frac{ra}{ra} - r + \cancel{ra}$$

$$1 \cdot a = -1 \rightarrow \boxed{a = -1/1}$$

نکته: $(r+\sqrt{r})$ و $(r-\sqrt{r})$ کسرها را ساده می‌کنیم

$$\left(\sqrt{r+\sqrt{r}} + \frac{1}{\sqrt{r+\sqrt{r}}} + r + \sqrt{r-\sqrt{r}} + \frac{1}{\sqrt{r-\sqrt{r}}} + r \right) = r \left(\underbrace{\sqrt{r+\sqrt{r}} + \sqrt{r-\sqrt{r}}}_{A} \right) + r$$

$$A = \cancel{r+\sqrt{r}} + \cancel{r-\sqrt{r}} + r\sqrt{1} = 9 \rightarrow A = \sqrt{9} \rightarrow \boxed{r\sqrt{9} + r}$$

$$\begin{aligned} x \rightarrow & rf(n) - rf(-n) = rn^2 - n \xrightarrow{r^2} rf(n) - 9f(-n) = 10n^2 - rn \\ -n \rightarrow & -rf(n) + rf(-n) = rn^2 + n \xrightarrow{r^2} -9f(n) + 9f(-n) = 10n^2 + rn \end{aligned} \quad \left. \vphantom{\begin{aligned} x \rightarrow \\ -n \rightarrow \end{aligned}} \right\} \oplus$$

$$-9f(n) = 10n^2 + n$$

$$\boxed{f(n) = \frac{10n^2 + n}{-9}}$$

$$x=0 \rightarrow rf(0) = rn - r \rightarrow \boxed{f(0) = \frac{r}{r}n - 1}$$

$$n=-1 \rightarrow f(-1) + f(-1) = \frac{r + 1r + r}{-1} \rightarrow rf(-1) = -1 \rightarrow \boxed{f(-1) = -9}$$