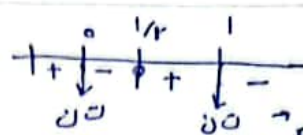
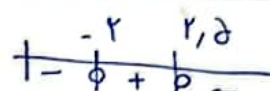
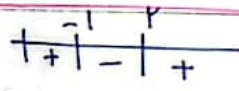


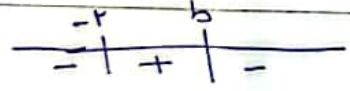
الف) $\frac{(n-1)^2 - n^2}{n(n-1)} \geq 0 \rightarrow \frac{1-2n}{n(n-1)} \geq 0 \rightarrow$  $D_f = (-\infty, 0) \cup [1, +\infty)$

مخرج نامساوی صفر نباشد $\rightarrow$ $\frac{n-2n-2}{n(n+1)} \neq 0 \rightarrow n \neq -1$
 $\frac{3n+4+n-1}{(n+2)(n-1)} \neq 0 \rightarrow n \neq -\frac{3}{2}$
 $\frac{(n+2)(n-1)}{(n+2)(n-1)} \neq 0 \rightarrow n \neq -2$
 $D_f = \mathbb{R} - \{-1, -\frac{3}{2}, -2\}$

الف) $\sqrt{(3^n - 2^n)(2^n - 1^n)} \rightarrow$ 
 $(3^n - 2^n)(2^n - 1^n) \geq 0 \rightarrow D_f = [-2, 1/2]$

ب) $\sqrt{y+1} = 3 - \sqrt{y-1} \rightarrow y = (3 - \sqrt{y-1})^2 - 1 \rightarrow (2 - \sqrt{y-1})(2 + \sqrt{y-1})$
 $n-1 \geq 0 \rightarrow n \geq 1$ چون زیر مجذور است باید نامنفی باشد $\leftarrow$
 $D_f = [1, +\infty)$

$n^2 - n - 2 \geq 0 \rightarrow (n-2)(n+1) \geq 0$ 
 $n^2 - 1 \geq 0 \rightarrow n \geq 1$ یا $n \leq -1 \rightarrow (-\infty, -1] \cup [1, +\infty)$ اشتراک
 $\sqrt{n^2 - 1} \neq -1$ $D_f = (-\infty, -1) \cup (2, +\infty)$
 هعواد بدمرار است $\leftarrow$

تنها حالتی که می توانه دامنه در بازه ی $[-2, b]$ باشد $\Leftarrow$ 
 $-n^2 + an + 3 \geq 0 \xrightarrow{n=-2} -4 - 2a + 3 = 0 \rightarrow a = -1/2$
 $-n^2 - 1/2 n + 3 \geq 0 \xrightarrow{x=2} 4 - 1 + 3 \leq 0 \rightarrow n^2 + n - 2 \leq 0$
 $a+b = \frac{3-1}{2} = 1 \rightarrow a = -1/2, b = 3/2$ $\xrightarrow{\text{وضع اولی}}$ $n = -2, 3/2$
 $(n+4)(n-3) \leq 0 \rightarrow n = -4, 3$

$f(n) \geq n \rightarrow$ $3n-2 \geq n, n \geq 1 \rightarrow n \geq 1 \rightarrow [1, +\infty)$
 $2n+3 \geq n, n < 1 \rightarrow n \geq -3, n < 1 \rightarrow [-3, 1)$
 $[-3, +\infty)$ اجتماع $\Leftarrow$

$$n = \sin \frac{\pi}{r} + \cos \frac{\pi}{r} \rightarrow \sin 45^\circ + \cos 45^\circ = \frac{\sqrt{r}}{r} + 1 \rightarrow \frac{r + \sqrt{r}}{r}$$

$$f(n) = n^r - r n \rightarrow f(n) = r \times \left(\frac{r + \sqrt{r}}{r} \right)^r - r \times \frac{r + \sqrt{r}}{r}$$

$$r \times \frac{r + r + r\sqrt{r}}{r^2} - r - r\sqrt{r} \rightarrow \frac{r + r\sqrt{r} - 1 - r\sqrt{r}}{r} \rightarrow -1/r$$

$$f(a) = \frac{a+1}{a-1} \rightarrow f\left(\frac{a+1}{a-1}\right) = a \rightarrow \frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = a$$

$$\frac{a+1+a-1}{a-1} = a \rightarrow \frac{2a}{a-1} = a \rightarrow a = a$$

$$\frac{a+1-a+1}{a-1} = a \rightarrow \frac{2}{a-1} = a \rightarrow a = a$$

$$a \in \mathbb{R}$$

$$g(a) = \sqrt{a^2 - 1} \rightarrow f(\sqrt{a^2 - 1}) = -f^2$$

$$f(n) = n^r - r n$$

$$(\sqrt{a^2 - 1} - r)^r = 0$$

$$a^2 - 1 = r \rightarrow a = \pm \sqrt{r+1}$$

$$(\sqrt{a^2 - 1} = r)^r$$

$$-r = n + r \rightarrow n = -r \rightarrow f(-r) = (-r)^r - 2(-r) + r = \sqrt{r}$$

$$r = n + r \rightarrow n = 1 \rightarrow f(1) = (1)^r - 2(1) + r = r$$

$$f(-r) \times f(r) = r \times \sqrt{r} = \sqrt{r^3}$$

$$r \cos^2 + 2 \cos = r, 2 \rightarrow (r \cos^2 + 2 \cos - r, 2 = 0) \times r$$

$$1 \cos^2 + 1 \cos - 2 = 0 \rightarrow \cos^2 + 1 \cos - 2 = 0$$

$$\cos = -1/r$$

$$(cos + 1/r)(cos - 1/r) = 0$$

$$-1/2 \leq \cos n \leq 1 \leftarrow \text{غير قابل قبول} \rightarrow \cos n = 1/r$$

$$f(r, 2) = \tan^2 45^\circ = (\sqrt{r})^2 = r$$