

$$\log \frac{1}{r} \geq \log^{p_n - a}$$

$$p_n > a \rightarrow n > \frac{a}{r} \quad 10$$

$$10 \gg p_n - a \rightarrow \frac{10 + a}{r} \gg n$$

$$D_f = \left(\underbrace{\frac{a}{r}}_b, \underbrace{\frac{10 + a}{r}}_c \right]$$

$$c - b = \frac{10 + a - a}{r} = \frac{10}{r}$$

(الف) تابع هست ✓
 $y_1^r = r_{n_1}^r + r_{n_1} - 1$
 $y_2^r = r_{n_2}^r + r_{n_2} - 1$ $\xrightarrow{n_1=n_2} y_1^r = y_2^r \rightarrow y_1 = y_2$

(ب) تابع نیست X
 $x = \frac{r}{r} \rightarrow \frac{r}{r} \cos y = y \times \cos \frac{r}{r}$

$y = 0, 2\pi, 4\pi, \dots$

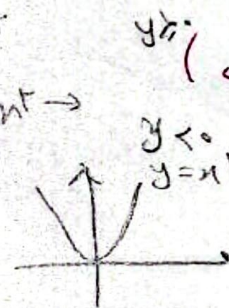
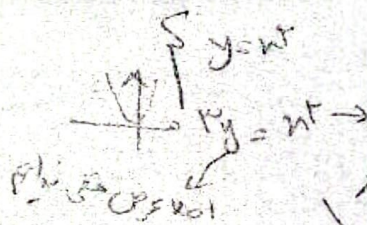
(د) تابع هست

(ج) تابع نیست

$n=1$

$-1 + [y] = 1$

$[y] = 2 \rightarrow 1 \leq y < 3$



$f(n) = \begin{cases} 2n^2 + b & n \geq 1 \cup x \leq -1 \\ a + 2n & -1 \leq n \leq 0 \end{cases}$

$f(2) = 2(4) - b = a + 4 \rightarrow 11 - b = a \rightarrow 9$

$\rightarrow a + b = 12$

$h(n) = a - bn - n^2$

$b \hat{=} 1, b > a$

$n=a \rightarrow a - ab - a^2 = 0 \rightarrow a(1-b-a) = 0$

$n=b \rightarrow a - b^2 - b^2 = 0 \rightarrow a = 2b^2 \rightarrow \sqrt{\frac{a}{2}} = b$

$\frac{a}{2} \in \mathbb{Z} \rightarrow a = 2k, k \in \mathbb{Z}^+$

$a=0$

$a+b=1$

$$an^2 + bn + c > 0 \rightarrow a = 0$$

$$b < 0$$

$$\frac{-c}{b} = 1 \rightarrow c = -b$$

$$P(0) - Pb - P|b| = 0 - Pb + Pb = 0$$

$$\frac{Pn + 1}{n + b} + a \geq 0$$

- 4

$$n = -b \quad -b = 1 \rightarrow b = -1$$

$(n-1)(n+1)$	$+$	0	$+$
n	$+$	0	$+$

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

$$|n| > 1 \rightarrow n > 1 \vee n < -1$$

$$|n| = [n]$$

$$n \in \mathbb{Z}^+$$

$$n \in \mathbb{Z}, n \geq 0$$

$$n \geq 0$$

$$D_f: [Pn - \frac{1}{P}] + [Pn + \frac{1}{P}] > 0$$

- 4

$$[Pn + \frac{1}{P} - 1] + [Pn + \frac{1}{P}] > 0 \rightarrow 2[Pn + \frac{1}{P}] > 1$$

$$[Pn + \frac{1}{P}] > \frac{1}{2} \rightarrow Pn + \frac{1}{P} \geq 1 \rightarrow Pn \geq \frac{1}{2}$$

$$n \geq \frac{1}{2P}$$