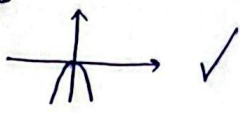


(a) $(n_1, y_1) \in f \xrightarrow{m_1=n_2} y_1^3 = 2n_1^2 + 2n_1 - 1 \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ ✓

(b) مثلث تعوض X $x = \frac{\pi}{p} \Rightarrow \cos x = 0 \Rightarrow \cos y = 0 \Rightarrow y \in \{k\pi + \frac{\pi}{p} \mid k \in \mathbb{Z}\}$

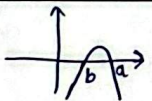
(c) ✓ $\frac{x+y}{p} = \sqrt{ny} \Rightarrow x+y = 2\sqrt{ny} \Rightarrow (\sqrt{n} - \sqrt{y})^2 = 0 \Rightarrow \sqrt{n} - \sqrt{y} = 0 \Rightarrow \sqrt{n} = \sqrt{y} \Rightarrow y = n$
 نیساز ناحیه اول و سوم

(d) ✓ $ny^2 + 2n - y^3 - 2y = 0 \Rightarrow y^3 + 2y = ny^2 + 2n \Rightarrow y(y^2 + 2) = n(y^2 + 2) \Rightarrow y = n$
 نیساز ناحیه اول و سوم

(a) $|y| - 2y = n^2$
 مست $\rightarrow y < 0 \rightarrow -2y = n^2 \Rightarrow y = -\frac{1}{2}n^2$
  ✓

(b) $x = 0 \Rightarrow [y] = 1 \Rightarrow 1 \leq y < 2$ X

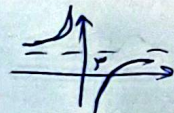
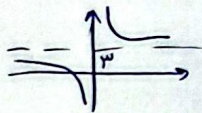
$x = 3 \Rightarrow 11 - b = 6 + a \Rightarrow \boxed{a + b = 12}$

$a^2 < 0$ ضرب 
 $x = b \Rightarrow a - 2b^2 = 0 \Rightarrow a = 2b^2$
 $x = a \Rightarrow -a^2 - ab + a = 0 \Rightarrow -a(a + b - 1) = 0$
 $a \neq 0 \Rightarrow \boxed{a + b = 1}$

$(-\infty, 2) \rightarrow$ عبارت خطی است $\rightarrow \begin{cases} a = 0 \\ b < 0 \\ c > 0 \end{cases}$
 $2b + c = 0 \Rightarrow c = -2b$

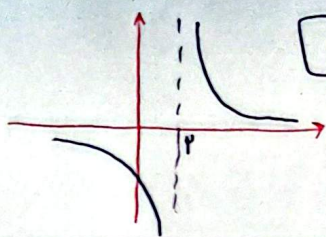
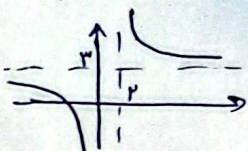
$3a + c - 3|b| = -2b - 3|b| = -2b + 3b = \boxed{b}$

$$\frac{m+p}{n+b}$$



$$a \leq -1$$

$$b = -2$$



$$b = -2$$

$$a = -1$$

6

$$n^3 - n > 0 \Rightarrow n(n^2 - 1) > 0 \Rightarrow n(n-1)(n+1) > 0$$

(ج)

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

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

$$|n| > 1$$

(د)

$$n > 1, n < -1$$

$$x = (-\infty, -1) \cup (1, +\infty)$$

7

$$|n| - [n] = 0 \Rightarrow |n| = [n] < \frac{n}{2}, n \in \mathbb{Z}$$

(ج)

$$x = \mathbb{R} - \{x > 0 \mid n \in \mathbb{Z}\}$$

8

$$y > 0 \Rightarrow \sqrt{y} = 1 - \sqrt{x} \Rightarrow 1 > \sqrt{x} \Rightarrow 0 \leq x \leq 1$$

(ب)

$$\left[1 - \frac{1}{p}\right] + \left[1 + \frac{p}{p}\right] > 0 \Rightarrow 1 \left[1 + \frac{p}{p}\right] - 1 > 0$$

$$\left[1 + \frac{p}{p}\right] > 1 \Rightarrow 1 + \frac{p}{p} > 1 \Rightarrow 1 > \frac{1}{p} \Rightarrow \left[n > \frac{1}{p}\right]$$

9

$$m - a > 0 \quad m > a \quad n > \frac{a}{p}$$

$$1 > \log(m - a) \Rightarrow 10 > m - a \Rightarrow m \leq 10 + a \Rightarrow n \leq \frac{a}{p} + \frac{a}{p}$$

$$\text{استنتاج} \rightarrow \frac{a}{p} < n \leq \frac{a}{p} + \Delta \quad b = \frac{a}{p} \quad c = \frac{a}{p} + \Delta$$

$$c - b = \Delta$$

10