

سید مرتضیٰ کاظمی

A 11:30 - 12:30

الذی سلطانی تهرانی

الف $y^3 = 2x^2 - 1$

$y_1^3 = 2x_1^2 - 1$

$y_2^3 = 2x_2^2 - 1$

$$\begin{cases} 2x_1^2 = y_1^3 + 1 \\ 2x_2^2 = y_2^3 + 1 \end{cases}$$

(تابع)

$y_1^3 + 1 = y_2^3 + 1 \Rightarrow \sqrt[3]{y_1^3 + 1} = \sqrt[3]{y_2^3 + 1}$

 $y_1 = y_2$

(تابع)

ب) $y^3 + y = 3x^2 - 1$

$y_1^3 + y_1 = 3x_1^2 - 1$

$y_2^3 + y_2 = 3x_2^2 - 1$

$y_1^3 + y_1 + 1 = y_2^3 + y_2 + 1$

$y_1^3 - y_2^3 + y_1 - y_2 = 0$

$(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) + (y_1 - y_2) = 0$

$(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0$

$y_1 - y_2 = 0 \Rightarrow y_1 = y_2$

بر اساس این قانون

(تابع)

if $(x_1, y_1) \in f$

if $(x_2, y_2) \in f$

$$\left. \begin{array}{l} \text{if } (x_1, y_1) \in f \\ \text{if } (x_2, y_2) \in f \end{array} \right\} \Rightarrow y_1 = y_2$$

$\Delta = b^2 - 4ac = y_2^2 - 4(y_2^2 + 1)$

$y_2^2 - 4y_2^2 - 4 = -3y_2^2 - 4$

همواره منفی پس برابر صفر نیست

الف $y = x^2 - 1$

$y_1 = x_1^2 - 1$

$x_1^2 = y_1 + 1$

$y_1 + 1 = y_2 + 1$

$y_2 = x_2^2 - 1$

$x_2^2 = y_2 + 1$

$y_1 = y_2$

(تابع)

ب) $|y| + ny = x^2 + 1$ if $x=0$ $|y|=1$ $y=\pm 1$

(تابع)

ج) $y^3 + x^3 = 2x - 1$ if $x=1$ $y^3 + 1 = 2 - 1$ $y^3 = 0$ $y=0$

$y_1^3 + x_1^3 = 2x_1 - 1$

$y_2^3 + x_2^3 = 2x_2 - 1$

$y_1 = y_2$

(تابع)

Elipon

$y_1^3 + 1 = 2x_1 - x_1^3 = y_2^3 + 1 = 2x_2 - x_2^3$

$y_2^3 + 1 = y_1^3 + 1$

$$2) \sqrt[3]{y} + \sqrt[3]{x} = 2 \quad \sqrt[3]{y_1} + \sqrt[3]{x_1} = 2 \quad \sqrt[3]{x_1} = 2 - \sqrt[3]{y_1}$$

$$\sqrt[3]{y_2} + \sqrt[3]{x_2} = 2 \quad \sqrt[3]{x_2} = 2 - \sqrt[3]{y_2}$$

$$\sqrt[3]{y_1} = \sqrt[3]{y_2} \quad (y_1 = y_2)$$

(نوع هاست)

$$الف) \tan \frac{\pi}{3} \quad \tan = \frac{\sin}{\cos} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$$

$$ب) \cot \frac{\pi}{4} \quad \cot = \frac{\cos}{\sin} = \frac{\frac{\sqrt{2}}{2}}{\frac{1}{2}} = \sqrt{2}$$

$$ج) \tan 30^\circ \quad \tan = \frac{\sin}{\cos} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}}$$

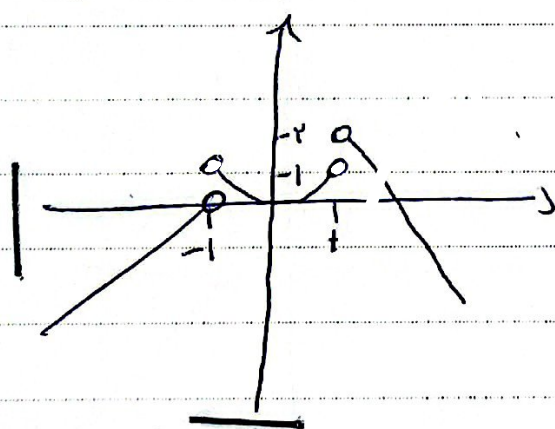
$$د) \cot 110^\circ \quad \cot = \frac{\cos}{\sin} = \frac{-1}{0} \quad (\text{تعريف نشده})$$

$$الف) \sin a = \frac{1}{2} \quad a = 30^\circ, 150^\circ \quad 0 < a < 2\pi$$

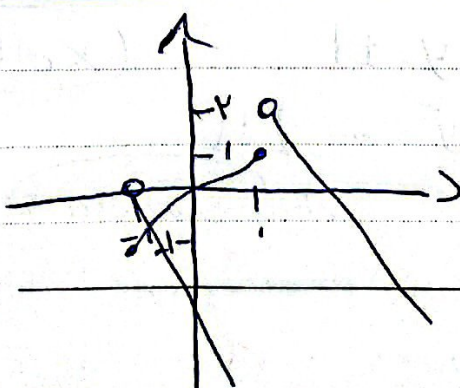
$$\frac{\pi}{6}, \frac{5\pi}{6}$$

$$ب) \cos a = \frac{\sqrt{2}}{2} \quad a = 45^\circ, 315^\circ$$

$$\frac{\pi}{4}, \frac{7\pi}{4}$$



$$f(x) = \begin{cases} -x+2 & x > 1 \text{ (توابع (x) - 2)} \\ x^2 & -1 < x < 1 \\ x+1 & x < -1 \text{ (توابع (x) - 1)} \end{cases}$$



$$f(x) = \begin{cases} -x+3 & x > 1 \text{ (توابع (x) 3)} \\ x^3 & -1 \leq x \leq 1 \text{ (توابع (x) 1, 1)} \\ -x-1 & x < -1 \text{ (توابع (x) 1)} \end{cases}$$

$$الف) y = (n-2)(n-3)(n-4)$$

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n	2	3	4
y	-6	+6	-6

2

3

$$ب) y = (n-2)(n-3)^2(n-4)$$

n	2	3*	4
y	+6	-6	+6

صحيح صحيح

4

5

6

7

8

$$الف) y = \frac{(n^2-2)(n^2-4)}{n-2}$$

n	2	3	4
y	-6	+6	-6

-1 9

10

$$ب) y = \frac{(n-2)(n-4)}{(n-2)^2}$$

n	2	3*	4
y	+6	-6	+6

11

12

13

$$الف) y = \frac{n^2 - 2n + 2}{n-2}$$

n	1	3
y	+6	-6

-9 14

15

$$ب) y = \frac{n^2 - 2n + 2}{n^2 - 2n + 2}$$

n	1	2	3
y	+6	+6	-6

$$\frac{(n-1)(n-2)}{(n-1)(n-2)}$$

16

17

18

19

$$الف) y = \frac{n^2(n-1)}{n^2+n+2}$$

n	-1	0*	1
y	+6	-6	+6

-10 20

21

22

$$X) \Delta = 6^2 - 4ac$$

$$1 - 4(1)(2) = -7$$

23

24

$$ب) y = \frac{n^2 + 2n + 2}{n^2 + 2n + 2}$$

$$\Delta < 0$$

$$(-\infty, +\infty)$$

25

26

$$\Delta = 2^2 - 4(1)(2) = -4$$

$$(n \in \mathbb{R})$$

27