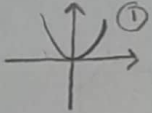
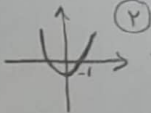


پاسخ نهی نشدنی تکلیف شماره (۴) رنگس امتحان ریاضی دهم

الف) $y^3 = 2x^2 - 1$ $y^3 = 2x_1^2 - 1 = 2x_2^2 - 1 \rightarrow (x_1, -1) \rightarrow (x_2, -1) \Rightarrow x_1 = x_2 \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$
تابع هست

ب) $y^3 + y = 3x^2 - 1$ $y_1^3 + y_1 = y_2^3 + y_2 \xrightarrow{\text{ناتوانی}} y_1^3 - y_2^3 + y_1 - y_2 = 0 \xrightarrow{0}$
 $(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0 \Rightarrow y_1 - y_2 = 0 \Rightarrow y_1 = y_2$ تابع هست

الف) $y = x^2 - 1$   تابع هست

ب) $|y| + xy = x^2 + 1 \xrightarrow{i \neq} x = 0 \Rightarrow |y| + 0 = 0 + 1 = |y| = 1 \Rightarrow y = \pm 1$ تابع نیست

ج) $y^3 + x^3 = 2x - 1$ $y_1^3 = 2x - 1 - x^3$ $y_2^3 = 2x - 1 - x^3 \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ تابع هست

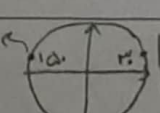
د) $\sqrt[3]{y} + \sqrt[3]{x} = 2$ $\sqrt[3]{y_1} + \sqrt[3]{x} = 2$ $\sqrt[3]{y_2} + \sqrt[3]{x} = 2 \Rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2} \Rightarrow y_1 = y_2$ تابع هست

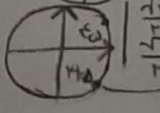
الف) $\tan \frac{\pi}{4} \rightarrow \tan = \frac{\sin}{\cos} \Rightarrow \frac{\pi}{4} = 45^\circ \Rightarrow \sin 45^\circ = \frac{\sqrt{2}}{2}$ $\cos 45^\circ = \frac{1}{\sqrt{2}} \Rightarrow \frac{\frac{\sqrt{2}}{2}}{\frac{1}{\sqrt{2}}} = \frac{\sqrt{2} \cdot \sqrt{2}}{2} = 1$

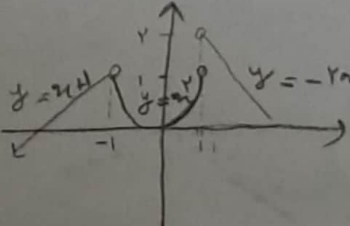
ب) $\cot \frac{\sqrt{\pi}}{2} \rightarrow \cot = \frac{\cos}{\sin} \Rightarrow \frac{\sqrt{\pi}}{2} = 90^\circ \Rightarrow \sin 90^\circ = 1$ $\cos 90^\circ = 0 \Rightarrow \frac{0}{1} = 0$

ج) $\tan 330^\circ \rightarrow \tan = \frac{\sin}{\cos} \Rightarrow \sin 330^\circ = -\frac{1}{2}$ $\cos 330^\circ = \frac{\sqrt{3}}{2} \Rightarrow \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$

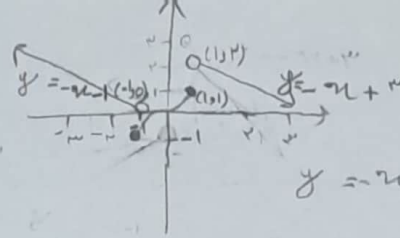
د) $\cot 150^\circ \rightarrow \cot = \frac{\cos}{\sin} \Rightarrow \sin 150^\circ = \frac{1}{2}$ $\cos 150^\circ = -\frac{\sqrt{3}}{2} \Rightarrow \frac{-\frac{\sqrt{3}}{2}}{\frac{1}{2}} = -\sqrt{3}$

الف) $\sin a = \frac{1}{2}$  $\Rightarrow a = 30^\circ = \frac{\pi}{6}$ $a = 150^\circ = \frac{5\pi}{6}$

ب) $\cos a = \frac{\sqrt{2}}{2}$  $\Rightarrow a = 45^\circ = \frac{\pi}{4}$ $a = 315^\circ = \frac{7\pi}{4}$

$f(x) = \begin{cases} -2x + 5 & x > 1 \\ x^2 & -1 < x < 1 \\ x + 1 & x < -1 \end{cases}$ 

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



دایره ضابطی $y = -x - 1$ است.

6

الف) $y = (x-2)(x-3)(x-4)$

x	2	3	4
$-$	$+$	$+$	$-$
$+$	$-$	$-$	$+$

7

ب) $y = (x-2)(x-3)^2(x-4)$

x	2	3	4
$+$	$+$	$-$	$-$
$+$	$-$	$-$	$+$

الف) $y = \frac{(x-2)(x-4)}{x-3}$

x	2	3	4
$-$	$+$	$+$	$-$
$+$	$-$	$-$	$+$

8

ب) $y = \frac{(x-2)(x-4)}{(x-3)^2}$

x	2	3	4
$+$	$+$	$-$	$-$
$+$	$-$	$-$	$+$

$$1+2-3=0$$

الف) $y = \frac{x^3 - 3x + 2}{x-3} = \frac{(x-1)(x-1)(x+2)}{x-3}$

x	-2	3
$+$	$+$	$-$
$+$	$-$	$+$

9

ب) $y = \frac{x^2 - 3x + 2}{x^2 - 4x + 3} = \frac{(x-1)(x-2)}{(x-1)(x-3)}$

x	1	2	3
$+$	$+$	$+$	$-$
$+$	$-$	$-$	$+$

الف) $y = \frac{x^4 - x^2}{x^2 + x + 1} = (x^2 - 1)(x^2 + 1) = (x-1)(x+1)(x^2 + 1)$

x	-1	0	1
$+$	$-$	$-$	$+$
$+$	$+$	$+$	$-$

10

ب) $y = \frac{x^2 + 3x + 4}{x^2 + 2x + 3} = \frac{(x+1)(x+3)}{(x+1)(x+2)}$

x	-1	-2	-3
$+$	$+$	$+$	$-$
$+$	$-$	$-$	$+$

x	-3	-2	-1
$+$	$+$	$+$	$-$
$+$	$-$	$-$	$+$