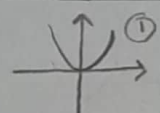
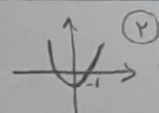


پاسخ های تشریحی تکلیف شماره (۴) نرگس امین ری سال اول دهم

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

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

الف) $y = x^2 - 1$   تابع هست

ب) $|y| + xy = x^2 + 1$ $x=0 \Rightarrow |y| + 0 = 0 + 1 = |y| = 1 \Rightarrow y = \pm 1$ 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

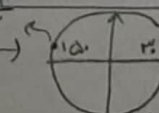
د) $\sqrt[3]{y} + \sqrt[3]{x} = 2$ $\sqrt[3]{y_1} + \sqrt[3]{x} = 2$ $\sqrt[3]{y_2} + \sqrt[3]{x} = 2 \Rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2} \Rightarrow y_1 = y_2$ تابع هست

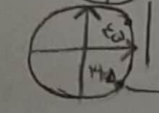
الف) $\tan \frac{\pi}{4} \rightarrow \tan = \frac{\sin}{\cos} \Rightarrow \frac{\pi}{4} = 45^\circ \Rightarrow \sin 45^\circ = \frac{\sqrt{2}}{2}$
 $\cos 45^\circ = \frac{1}{\sqrt{2}} \Rightarrow \frac{\frac{\sqrt{2}}{2}}{\frac{1}{\sqrt{2}}} = \frac{\sqrt{2} \times \sqrt{2}}{2 \times 1} = \frac{2}{2}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

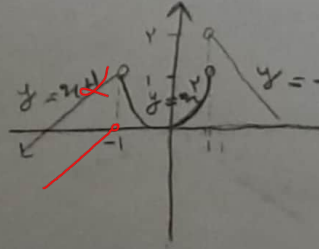
ب) $\cot \frac{\sqrt{2}\pi}{4} \rightarrow \cot = \frac{\cos}{\sin} \Rightarrow \frac{\sqrt{2}\pi}{4} = 45^\circ \Rightarrow \sin 45^\circ = \frac{1}{\sqrt{2}}$
 $\cos 45^\circ = \frac{\sqrt{2}}{2} \Rightarrow \frac{\frac{\sqrt{2}}{2}}{\frac{1}{\sqrt{2}}} = \frac{\sqrt{2} \times \sqrt{2}}{2 \times 1} = \frac{2}{2} = 1$

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

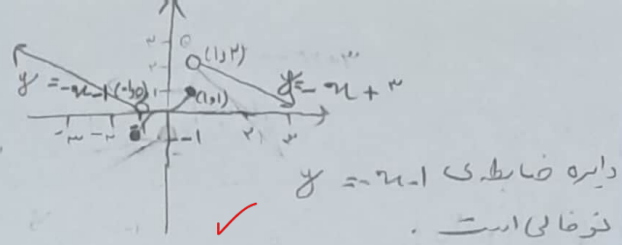
د) $\cot 180^\circ \rightarrow \cot = \frac{\cos}{\sin} \Rightarrow \sin 180^\circ = 0$
 $\cos 180^\circ = -1 \Rightarrow \frac{-1}{0}$ تعریف نشده

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

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

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

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



۲

6

الف) $y = (x-2)(x-3)(x-4)$ x | $-$ $+$ $+$ $-$ $+$ $+$ ✓

۲

7

ب) $y = (x-2)(x-3)^2(x-4)$ x | $+$ $+$ $-$ $-$ $+$ $+$ ✓

الف) $y = \frac{(x-2)(x-4)}{x-3}$ x | $-$ $+$ $+$ $-$ $+$ ✓

8

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

۲

$$1+2-3=0$$

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

9

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

۲

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 | $+$ $-$ $+$ $-$ $+$ $+$ ✓

10

۰.۱۷۵

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

x | $+$ $+$ $-$ $-$ $+$ $+$ ✓

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

همواره مثبت $\Rightarrow$ دلتای صورت $(3)^2 - 4(1)(4) = -7 < 0$

همواره مثبت $\Rightarrow$ دلتای مخرج $(2)^2 - 4(1)(3) = -8 < 0$

عبارت همواره مثبت است