

الف) $y_1^3 = 2x_1^2 - 1$
 $y_2^3 = 2x_2^2 - 1$

تابع است

✓ (۲)

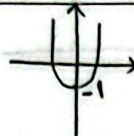
۱, ۵

ب) $y^3 + y = 3x^2 - 1 \Rightarrow y_1^3 = 3x_1^2 - 1 - y_1$
 $y_2^3 = 3x_2^2 - 1 - y_2$

تابع است

مرتب
تابع است

الف) $y = x^2 - 1$
 تابع است



✓ (۲)

ب) $|y| + xy = x^2 + 1$
 تابع است

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

ج) $y^3 + x^3 = 2x - 1$
 تابع است

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

د) $\sqrt[3]{y} + \sqrt{x} = 2$
 تابع است

$\sqrt[3]{y_1} = 2 - \sqrt{x_1}$
 $\sqrt[3]{y_2} = 2 - \sqrt{x_2}$

الف) $\frac{\sin}{\cos} 90^\circ = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$

د) $\cot 110^\circ \Rightarrow$ تعریف نشده

ب) $\frac{\cos}{\sin} 110^\circ = \frac{-\frac{\sqrt{3}}{2}}{\frac{1}{2}} = -\sqrt{3}$

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

✓ (۲)

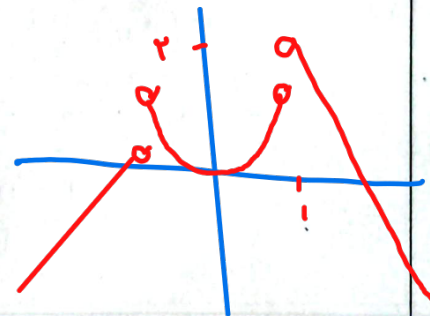
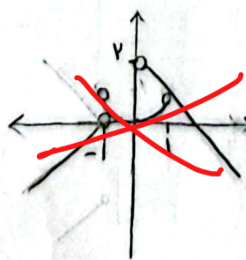
الف) $\sin a = \frac{1}{2} \quad a: \{\frac{\pi}{6}, \frac{5\pi}{6}\}$

ب) $\cos a = \frac{\sqrt{2}}{2} \quad a: \{\frac{\pi}{4}, \frac{7\pi}{4}\}$

✓ (۲)

$f(x) = \begin{cases} -2x+4 & x > 1 \\ x^2 & -1 < x < 1 \\ x+1 & x < -1 \end{cases}$

۱, ۵



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

✓ (2)



الف) $y = (x-2)(x-3)(x-4)$

$$\begin{array}{c} 2 \quad 3 \quad 4 \\ - \quad + \quad - \quad + \end{array}$$

$$D_f = \mathbb{R}$$

ب) $y = (x-2)(x-3)^2(x-4)$
 $x-3 \neq 0 \Rightarrow x \neq 3$

$$\begin{array}{c} 2 \quad 3 \quad 4 \\ - \quad + \quad - \quad + \end{array}$$

(2) ✓

الف) $\frac{(x-2)(x-4)}{x-3} \Rightarrow x-3 \neq 0$
 $x \neq 3$

$$\begin{array}{c} 2 \quad 3 \quad 4 \\ - \quad + \quad - \quad + \end{array}$$

ب) $\frac{(x-2)(x-4)}{(x-3)^2}$

$$\begin{array}{c} 2 \quad 3 \quad 4 \\ + \quad - \quad + \end{array}$$

✓ (2)

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

$$\begin{array}{c} 1 \quad 2 \quad 3 \\ - \quad + \quad - \quad + \end{array}$$

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

$$\begin{array}{c} 1 \quad 2 \quad 3 \\ + \quad - \quad + \end{array}$$

(2) ✓

الف) $\frac{x^2-x}{x^2+x+1} = \frac{(x^2-x)(x^2+x)}{x^2+x+1} \rightarrow 1, 0, -1$

$$\begin{array}{c} 1 \quad 0 \quad -1 \\ - \quad + \quad - \quad + \end{array}$$

ب) $\frac{x^2+3x+2}{x^2+2x+3} \rightarrow \Delta < 0$

$$\begin{array}{c} 1 \quad 2 \quad 3 \\ - \quad + \quad - \quad + \end{array}$$

(2) ✓