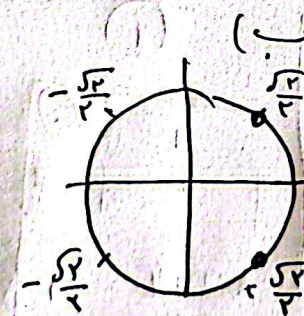
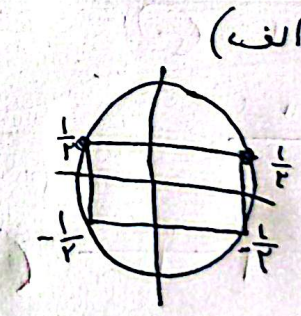
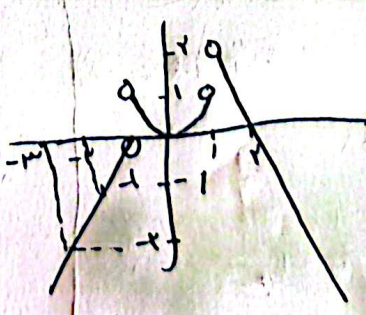
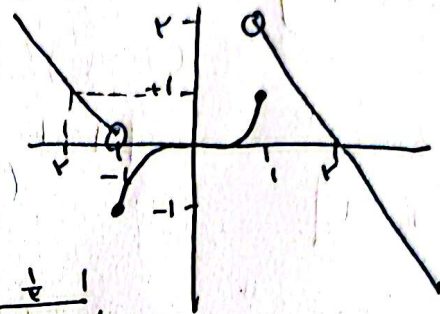


$\left. \begin{aligned} y_1^3 &= 2n_1^2 - 1 \\ y_2^3 &= 2n_2^2 - 1 \end{aligned} \right\} \xrightarrow{n_1=n_2} y_1^3 = y_2^3 \Rightarrow \sqrt[3]{y_1^3} = \sqrt[3]{y_2^3} \Rightarrow \boxed{y_1 = y_2}$	الف	1
$\left. \begin{aligned} y_1^2 + y_1 &= 2n_1^2 - 1 \\ y_2^2 + y_2 &= 2n_2^2 - 1 \end{aligned} \right\} \xrightarrow{n_1=n_2} y_1^2 + y_1 = y_2^2 + y_2 \Rightarrow \boxed{y_1 = y_2}$ $(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0 \Rightarrow y_1 - y_2 = 0 \Rightarrow \boxed{y_1 = y_2}$ $y_1^2 + y_2^2 + y_1 y_2 + 1 = 0 \Rightarrow \boxed{y_1 = y_2}$	الف ب ج	1 ریشه ندارد
$ y + ny = n + 1 \xrightarrow{n=0} y = 1 \Rightarrow \boxed{y = \pm 1}$ تابع یکنواخت	الف ب ج مجموعه های محدودی در بازه‌ها قرار را قطع می‌کند	2
$\sqrt[3]{y_1} = 2 - \sqrt[3]{n_1} \Rightarrow y_1 = (2 - \sqrt[3]{n_1})^3$ $\sqrt[3]{y_2} = 2 - \sqrt[3]{n_2} \Rightarrow y_2 = (2 - \sqrt[3]{n_2})^3$ تابع یکنواخت	الف ب ج تابع است	3
$\cot \frac{\sqrt{\pi}}{2} = \cot \frac{\pi}{2} \Rightarrow \frac{\cos \frac{\pi}{2}}{\sin \frac{\pi}{2}} = \frac{-\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \boxed{-\sqrt{3}}$	الف ب ج تابع است	3
$\cot 180^\circ = \frac{\cos 180^\circ}{\sin 180^\circ} = \frac{-1}{0} = \text{تangent}$	الف ب ج تابع است	3
$\cos \alpha = \frac{1}{2}$ $\alpha = \frac{\pi}{6}, \frac{5\pi}{6}$ 	الف ب ج تابع است	4
$\sin \alpha = \frac{1}{2}$ $\alpha = \frac{\pi}{6}, \frac{5\pi}{6}$ 	الف ب ج تابع است	4
$\begin{array}{c ccc} n & 2 & 3 & \\ \hline y & 0 & -2 & \end{array}$ $\begin{array}{c ccc} n & -2 & -3 & -4 \\ \hline y & -1 & -2 & -3 \end{array}$		5
$\begin{array}{c ccc} n & -\frac{1}{2} & 0 & \frac{1}{2} \\ \hline y & 1 & 0 & 1 \end{array}$		

$$\begin{array}{c|ccc} x & -x & -x^2 & -x^3 \\ \hline y & 3 & 2 & 1 \end{array}$$

$$\begin{array}{c|cc} x & x & -x-1 \\ \hline y & 1 & 0 \end{array}$$

$$\begin{array}{c|cccc} x & -1 & -\frac{1}{x} & 0 & \frac{1}{x} & 1 \\ \hline y & -1 & -\frac{1}{x} & 0 & \frac{1}{x} & 1 \end{array}$$



$$y = (x-2)(x^2-x)(x-2)(x-2) \quad (ب)$$

$$\begin{array}{c} x=2 \quad x=0 \quad x=1 \quad x=2 \\ + \quad \phi \quad - \quad \phi \quad - \quad \phi \quad + \end{array}$$

$$\text{دامنه تابع} = [2, +\infty) \cup [2, -\infty)$$

$$(x-2)(x^2-x)(x-2) = y \quad (الف)$$

$$\begin{array}{c} x=2 \quad x=0 \quad x=1 \\ - \quad \phi \quad + \quad \phi \quad - \quad 1 \quad + \end{array}$$

$$\text{دامنه تابع} = [2, 3] \cup [4, +\infty)$$

$$\frac{(x-2)(x-4)}{(x-2)(x-3)} \stackrel{x=4}{=} \frac{x=4}{x=2} \quad (ب)$$

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

$$\text{دامنه تابع} = (-\infty, 2] \cup [2, -\infty)$$

$$\frac{(x-2)(x-4)}{x-3} \stackrel{x=4}{=} \frac{x=4}{x=2} \quad (الف)$$

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

$$\text{دامنه تابع} = (-\infty, 2] \cup (2, 3] \cup (3, 4) \cup (4, +\infty)$$

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

$$\frac{x^2-3x+2}{x^2-6x+3} = \frac{(x-2)(x-1)}{(x-3)(x-1)} \stackrel{x=3}{=} \frac{x=3}{x=2} \quad (الف)$$

$$\begin{array}{c} x=1 \quad x=2 \quad x=3 \\ + \quad \phi \quad - \quad \phi \quad - \quad \phi \quad + \end{array} \quad \text{دامنه تابع} = (-\infty, 3] \cup [2, -\infty)$$

$$\frac{x^2-3x+2}{x-3} \stackrel{x=3}{=} \frac{x^2-3x+2}{x-3} \Rightarrow \frac{x^2-3x+2}{x^2-3x-2} \quad (الف)$$

$$\begin{array}{c} x=2 \quad x=3 \quad x=4 \\ + \quad \phi \quad - \quad \phi \quad - \quad \phi \quad + \end{array} \quad \frac{x^2-3x+2}{x^2-3x-2}$$

$$\text{دامنه تابع} = (-\infty, 3] \cup (3, 4) \cup (4, +\infty)$$

$$\frac{x^2+3x+2}{x^2+2x+3} \Rightarrow \Delta = 9-12 = -3 < 0$$

این عبارات همیشه مثبت است
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$$\frac{x^2+3x+2}{x^2+2x+3} \Rightarrow \Delta = 0$$

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