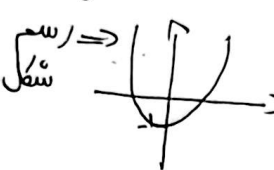
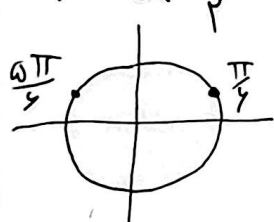
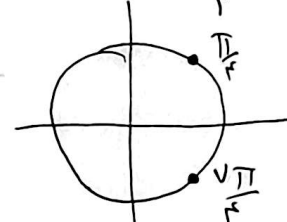
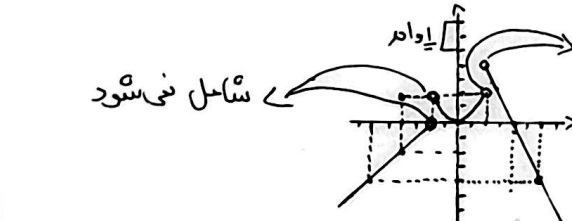
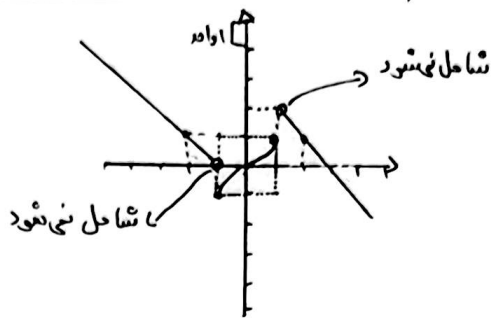


الف) $y^3 = 2x^2 - 1$ $y_1^3 = 2x_1^2 - 1$ $y_2^3 = 2x_2^2 - 1$ $\Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ تابع است.	ب) $y^3 + y = 2x^2 - 1$ $y_1^3 + y_1 = 2x_1^2 - 1$ $y_2^3 + y_2 = 2x_2^2 - 1$ $\Rightarrow y_1^3 + y_1 = y_2^3 + y_2$ $\Rightarrow y_1(y_1^2 + 1) = y_2(y_2^2 + 1)$ تابع است.	نکته: دو معادله همگامی	۱	
الف) $y = x^2 - 1$  تابع است.	ب) $ y + xy = x^2 + 1$ مثال $x=0 \Rightarrow y =1$ $\Rightarrow y = \pm 1$ تابع نیست.	ج) $y^3 + xy = 2x^2 - 1$ $y_1^3 + xy_1 = 2x_1^2 - 1$ $y_2^3 + xy_2 = 2x_2^2 - 1$ $\Rightarrow y_1^3 + xy_1 = y_2^3 + xy_2$ $\Rightarrow y_1 = y_2$ تابع است.	د) $\sqrt{y} + \sqrt{x} = 2$ $\sqrt{y_1} + \sqrt{x_1} = 2$ $\sqrt{y_2} + \sqrt{x_2} = 2$ $\Rightarrow \sqrt{y_1} = 2 - \sqrt{x_1}$ $\Rightarrow \sqrt{y_2} = 2 - \sqrt{x_2}$ $\Rightarrow y_1 = y_2$ تابع است.	۲
الف) $\tan \frac{\pi}{3}$ $\frac{\sin}{\cos} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \frac{\sqrt{3} \times \frac{1}{2}}{\frac{1}{2} \times 1} = \sqrt{3}$ $\sqrt{3}$	ب) $\cot \frac{\sqrt{3}\pi}{6}$ $\frac{\cos}{\sin} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \frac{\sqrt{3} \times \frac{1}{2}}{\frac{1}{2} \times 1} = \sqrt{3}$ $\sqrt{3}$	ج) $\tan 30^\circ$ $\frac{\sin}{\cos} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1 \times \frac{1}{2}}{\sqrt{3} \times \frac{1}{2}} = \frac{1}{\sqrt{3}}$ $\frac{1}{\sqrt{3}}$	د) $\cot 11^\circ$ $\frac{\cos}{\sin} = \frac{-1}{0} = \text{تعریف نشده}$ تعریف نشده	۳
الف) $\sin \alpha = \frac{1}{2}$  $\alpha = \left\{ \frac{\pi}{6}, \frac{5\pi}{6} \right\}$	ب) $\cos \alpha = \frac{\sqrt{3}}{2}$  $\alpha = \left\{ \frac{\pi}{6}, \frac{11\pi}{6} \right\}$		۴	
 شافل می شود شافل نمی شود		$f(x) = \begin{cases} -2x+3 & x \geq 1 \\ x^2 & -1 < x < 1 \\ x+1 & x \leq -1 \end{cases}$		۵



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

الف) $y = (x-2)(x-3)(x-4)$

x	2	3	4
y	-	+	-

ب) $y = (x-2)(x-3)^2(x-4)$

x	2	3*	4
y	+	-	+

الف) $y = \frac{(x-2)(x-4)}{x-3}$

x	2	3	4
y	-	+	-

ب) $y = \frac{(x-2)(x-4)}{(x-3)^2}$

x	2	3*	4
y	+	-	+

الف) $y = \frac{x^3-2x+2}{x-3} \rightarrow -2$
 $\hookrightarrow 3$

x	-2	1	3
y	-	+	-

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

x	1*	2	3
y	+	+	-

الف) $y = \frac{x^2-9}{x^2+x+3} = \frac{x^2(1-1)}{x^2+x+3} = \frac{1 \cdot 1 \cdot (x-1)(x+1)}{x^2+x+3}$
 $\Delta = 1-1 = 0$ ریشه برابر

x	-1	0*	1
y	+	-	-

ب) $y = \frac{x^2+2x+2}{x^2+x+3} \rightarrow \Delta = 9-14$ ریشه نداشت
 $\rightarrow \Delta = 3-12 = -9$ ریشه نداشت

محواره حقیقی