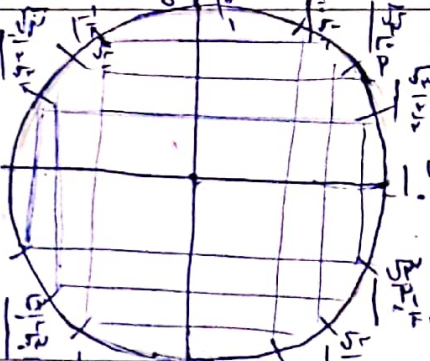


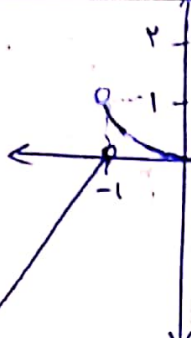
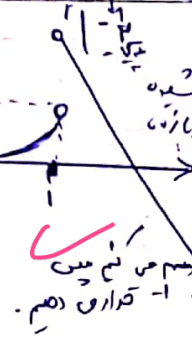
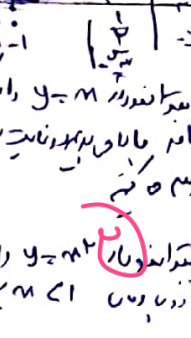
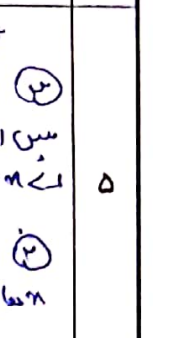
۱۹۵۵ آزمون ختمی کامل وضوب نوشتی

الف) $y^3 = 2m^2 - 1$
 $\rightarrow \begin{cases} y_1^3 = 2m_1^2 - 1 \\ y_2^3 = 2m_2^2 - 1 \end{cases} \xrightarrow{m_1 = m_2} y_1^3 = y_2^3 \rightarrow y_1 = y_2$ تابع یکتا است.
 ب) $y^3 + y = 3m^2 - 1$ $\xrightarrow{[I] \text{ را } y_1 = \frac{-y_2 \pm \sqrt{\Delta}}{2}}$ $\begin{cases} (y_1 - y_2) = 0 \rightarrow y_1 = y_2 \\ y_1^3 + y_1 + y_2 + 1 = 0 \end{cases}$
 ج) $y^3 + y_1 = 3m^2 - 1$ $\xrightarrow{m_1 = m_2} y_1^3 + y_1 = y_2^3 + y_2$ $(y_1 - y_2)(y_1^2 + y_1 + y_2 + y_1^2 + y_2^2 + y_1 y_2 + 1) = y_2 - y_1$
 $\rightarrow \begin{cases} y_1^3 + y_2 = 3m^2 - 1 \\ y_2^3 + y_1 = 3m^2 - 1 \end{cases} \xrightarrow{[I] \text{ را } y_1 = \frac{-y_2 \pm \sqrt{\Delta}}{2}}$ $\begin{cases} (y_1 - y_2) = 0 \rightarrow y_1 = y_2 \\ (y_1 - y_2)(y_1^2 + y_1 + y_2 + y_1^2 + y_2^2 + y_1 y_2 + 1) = 0 \end{cases}$

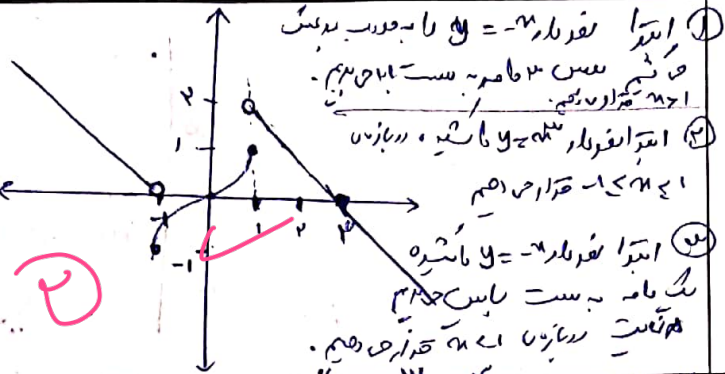
الف) $y = m^2 - 1$ 
 ب) $|y| + my = m^2 + 1 \rightarrow |y| + 0 = 1 \rightarrow |y| = 1 \rightarrow y = \pm 1$
 ج) $y^3 + m^3 = 2m - 1 \rightarrow y = \sqrt[3]{2m - 1 - m^3}$
 د) $\sqrt[3]{y} + \sqrt[3]{m} = 2 \rightarrow \sqrt[3]{y} = 2 - \sqrt[3]{m} \rightarrow y = (2 - \sqrt[3]{m})^3$
 باید با هم از روش های گفته شده عمل کنی!

الف) $\tan \frac{\pi}{3} \rightarrow \tan y = \frac{\sin y}{\cos y} \Rightarrow -\sin(\frac{\pi}{3}) = \frac{\sqrt{3}}{2} / \cos(\frac{\pi}{3}) = \frac{1}{2} \Rightarrow \frac{\sqrt{3}}{1} = \sqrt{3}$
 ب) $\cot \frac{5\pi}{4} \rightarrow \cot y = \frac{\cos y}{\sin y} \Rightarrow \cos(\frac{5\pi}{4}) = \frac{-\sqrt{2}}{2} / \sin(\frac{5\pi}{4}) = \frac{-1}{\sqrt{2}} \Rightarrow \frac{-\sqrt{2}}{-1} = \sqrt{2}$
 ج) $\tan 330^\circ \rightarrow \tan y = \frac{\sin y}{\cos y} \Rightarrow \sin(330^\circ) = -\frac{1}{2} / \cos(330^\circ) = \frac{\sqrt{3}}{2} \Rightarrow \frac{-1/2}{\sqrt{3}/2} = -\frac{1}{\sqrt{3}}$
 د) $\cot 180^\circ \rightarrow \cot y = \frac{\cos y}{\sin y} \Rightarrow \cos(180^\circ) = -1 / \sin(180^\circ) = 0 \Rightarrow \frac{-1}{0}$ تعریف نشده!

الف) $\sin \alpha = \frac{1}{r} \rightarrow \alpha = \frac{\pi}{6} \text{ و } \alpha = \frac{5\pi}{6}$
 $\alpha = 30^\circ \text{ و } \alpha = 150^\circ$
 ب) $\cos \alpha = \frac{\sqrt{2}}{2} \rightarrow \alpha = \frac{\pi}{4} \text{ و } \alpha = \frac{7\pi}{4}$
 $\alpha = 45^\circ \text{ و } \alpha = 315^\circ$


الف) $f(m) = \begin{cases} -2m+2 & m > 1 \\ m^2 & -1 < m < 1 \\ m+1 & m < -1 \end{cases}$
 ب) $y = m^2$ 
 ج) $y = -m$ 
 د) $y = m$ 
 ه) $y = 2m$ 

$$f(x) = \begin{cases} -x+3 & x > 1 \\ x^2 & -1 \leq x \leq 1 \\ -x-1 & x < -1 \end{cases}$$

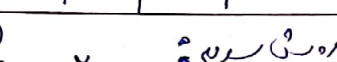


الف) $y = (x-2)(x-3)(x-4) = 0$
 $x-2=0 \rightarrow x=2$
 $x-3=0 \rightarrow x=3$
 $x-4=0 \rightarrow x=4$



x	$x-2$	$x-3$	$x-4$	y
$x < 2$	-	-	-	-
$2 < x < 3$	+	-	-	+
$3 < x < 4$	+	+	-	-
$x > 4$	+	+	+	+

ب) $y = (x-1)(x-3)(x-4) = 0$
 $x-1=0 \rightarrow x=1$
 $x-3=0 \rightarrow x=3$
 $x-4=0 \rightarrow x=4$



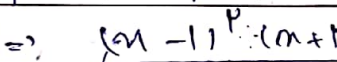
x	$x-1$	$x-3$	$x-4$	y
$x < 1$	-	-	-	-
$1 < x < 3$	+	-	-	+
$3 < x < 4$	+	+	-	-
$x > 4$	+	+	+	+

الف) $y = (x-2)(x-4) = 0$
 $x-2=0 \rightarrow x=2$
 $x-4=0 \rightarrow x=4$



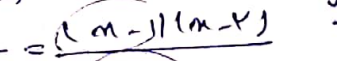
x	$x-2$	$x-4$	y
$x < 2$	-	-	+
$2 < x < 4$	+	-	-
$x > 4$	+	+	+

ب) $y = (x-1)(x-3) = 0$
 $x-1=0 \rightarrow x=1$
 $x-3=0 \rightarrow x=3$



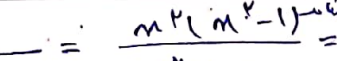
x	$x-1$	$x-3$	y
$x < 1$	-	-	+
$1 < x < 3$	+	-	-
$x > 3$	+	+	+

الف) $x^3 - 3x^2 + 2x = 0$
 $x(x^2 - 3x + 2) = 0$
 $x(x-1)(x-2) = 0$
 $x=0, x=1, x=2$



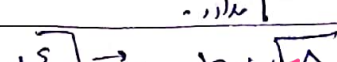
x	x	$x-1$	$x-2$	y
$x < 0$	-	-	-	-
$0 < x < 1$	+	-	-	+
$1 < x < 2$	+	+	-	-
$x > 2$	+	+	+	+

ب) $x^3 - 3x^2 + 2x = 0$
 $x(x^2 - 3x + 2) = 0$
 $x(x-1)(x-2) = 0$
 $x=0, x=1, x=2$



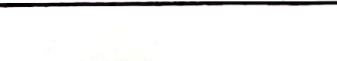
x	x	$x-1$	$x-2$	y
$x < 0$	-	-	-	-
$0 < x < 1$	+	-	-	+
$1 < x < 2$	+	+	-	-
$x > 2$	+	+	+	+

الف) $y = x^2 - 3x + 2 = 0$
 $x^2 - 3x + 2 = (x-1)(x-2) = 0$
 $x=1, x=2$



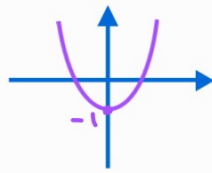
x	$x-1$	$x-2$	y
$x < 1$	-	-	+
$1 < x < 2$	+	-	-
$x > 2$	+	+	+

ب) $y = x^2 + 3x + 2 = 0$
 $x^2 + 3x + 2 = (x+1)(x+2) = 0$
 $x=-1, x=-2$



x	$x+1$	$x+2$	y
$x < -2$	-	-	+
$-2 < x < -1$	+	-	-
$x > -1$	+	+	+

سرسن (الف- ۲)



خط افقی صید با آن را قطع کن پس تا بویست $y = x^2 - 1$

۲- ج) $y^3 + x^3 = x_{n-1}$ $\xrightarrow{\text{تغییر بیانی}}$ $\begin{cases} y_1^3 + x_1^3 = x_{n-1} - 1 \\ y_2^3 + x_2^3 = x_{n-2} - 1 \end{cases}$

if $x_1 = x_2$ $y_1^3 = y_2^3 \rightarrow y_1 = y_2$ تا بویست

$-x_1^3 + x_{n-1} - 1 = -x_2^3 + x_{n-2} - 1$

۲- د) $\sqrt[3]{y} + \sqrt[3]{x} = 2$ $\xrightarrow{\text{تغییر بیانی}}$ $\begin{cases} \sqrt[3]{y_1} + \sqrt[3]{x_1} = 2 \\ \sqrt[3]{y_2} + \sqrt[3]{x_2} = 2 \end{cases}$

if $x_1 = x_2$ $2 - \sqrt[3]{y_1} = 2 - \sqrt[3]{y_2} \rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow y_1 = y_2$ تا بویست

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

$\sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow y_1 = y_2$ تا بویست

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