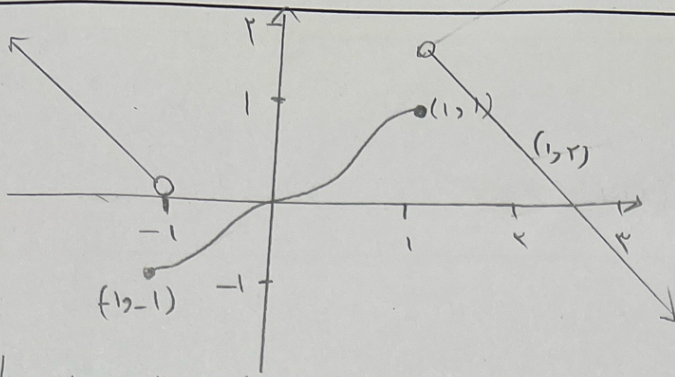




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الف)

$P(n)$	-	+	-	+
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ب)

$P(n)$	+	-	-	+
--------	---	---	---	---

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الف)

$P(n)$	-	+	-	+
--------	---	---	---	---

ب)

$P(n)$	+	-	-	+
--------	---	---	---	---

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الف)

$P(n)$	+	-	-	+
--------	---	---	---	---

$$\frac{(n+2)(n-1)^2}{n-3}$$

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ب)

$P(n)$	+	+	-	+
--------	---	---	---	---

$$\frac{(n-1)(n-2)}{(n-1)(n-3)}$$

الف)

$P(n)$	+	-	-	+
--------	---	---	---	---

$$\frac{n^2(n^2-1)}{-2^2+n+2} \triangleleft \Delta < 0$$

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ب)

$P(n)$				
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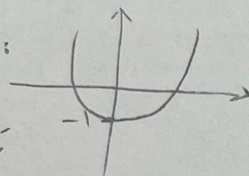
$$\frac{(\Delta < 0)}{\Delta < 0} + = +$$

$+ \quad + \quad + \quad n \in \mathbb{R}$

الف) $y_1^3 = 2x_1^2 - 1 \xrightarrow{x_1 = x_2} y_1^3 = -1 \rightarrow y_1 = y_2$ تابع هست
 $y_2^3 = 2x_2^2 - 1 \xrightarrow{x_1 = x_2} y_2^3 = -1$

ب) $y_1^3 + y_1 = 2x_1^2 - 1$
 $y_2^3 + y_2 = 2x_2^2 - 1 \xrightarrow{x_1 = x_2} y_1^3 + y_1 = -1$
 $y_2^3 + y_2 = -1$
 $y_1^3 + y_1 - y_2^3 - y_2 = 0$
 $(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + y_1 + y_2 + 1) = 0$
 $\Rightarrow y_1 = y_2 \checkmark$ تابع هست همیشه صحت

الف) $y_1 = x_1^2 - 1$
 $y_2 = x_2^2 - 1 \xrightarrow{x_1 = x_2} y_1 = -1 \rightarrow y_1 = y_2$ تابع
 $y_2 = -1 \rightarrow y_1 = y_2$ تابع
 رسم شکل:



ب) $|y_1| = x_1^2 + 1 - x_1$
 $x = 0 \Rightarrow |y_1| = 0 + 1 - 0 = 1$
 $|y_1| = 1 \Rightarrow y_1 = 1$
 $y_1 = 1$ تابع

ج) $y_1^3 = 2x_1^2 - 1 + x_1^3$
 $y_2^3 = 2x_2^2 - 1 + x_2^3 \xrightarrow{x_1 = x_2} y_1^3 = -1$
 $y_2^3 = -1$
 $y_1 = y_2 \Rightarrow y_1 = y_2$ تابع هست

د) $\sqrt[3]{y_1} = 2 - \sqrt[3]{x_1}$
 $\sqrt[3]{y_2} = 2 - \sqrt[3]{x_2} \xrightarrow{x_1 = x_2} \sqrt[3]{y_1} = \sqrt[3]{y_2}$
 $y_1 = y_2$ تابع هست

الف) $\tan = \frac{\sin}{\cos} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$

تعریف نمره $\rightarrow \frac{-1}{0} \rightarrow \infty$

ب) $\cot = \frac{\cos}{\sin} = \frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \sqrt{3}$

ج) $\frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}}$

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

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

