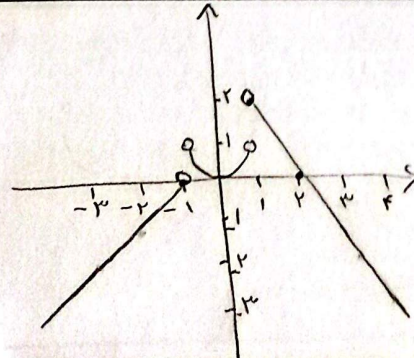
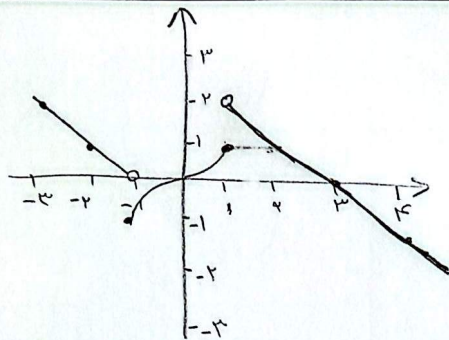
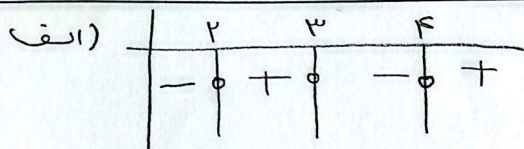


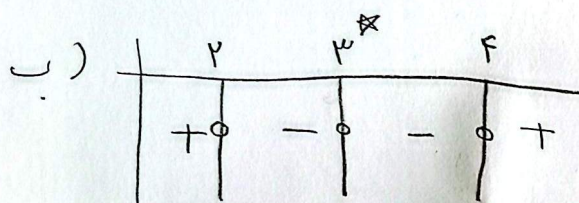
الف) $y^3 = 2x^2 - 1$ $y_1^3 = 2x_1^2 - 1$ $y_2^3 = 2x_2^2 - 1$ } $x_1 = x_2 \rightarrow y_1^3 = y_2^3$ $\boxed{y_1 = y_2}$ ← تابع است	ب) $y^3 + y = 3x^2 - 1$ $y_1^3 + y_1 = 3x_1^2 - 1$ $y_2^3 + y_2 = 3x_2^2 - 1$ } $x_1 = x_2 \rightarrow y_1^3 + y_1 = y_2^3 + y_2$ $= y_1^3 - y_2^3 + y_1 - y_2 = (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1)(y_1 + y_2) = 0$ $= (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0$ صفر نیست $\boxed{y_1 = y_2}$ ← تابع است		
الف) $y = x^2 - 1$ $y_1 = x_1^2 - 1$ $y_2 = x_2^2 - 1$ } $x_1 = x_2 \rightarrow y_1 = y_2$ تابع است ب) $y + xy = x^2 + 1$ $x = 0 \rightarrow y = 1 \Rightarrow y = \pm 1$ تابع نیست	ج) $y^3 + x^3 = 2x - 1$ $y_1^3 + x_1^3 = 2x_1 - 1$ $y_2^3 + x_2^3 = 2x_2 - 1$ } $x_1 = x_2 \rightarrow y_1^3 = y_2^3$ $y_1 = y_2$ تابع است د) $\sqrt[3]{y} + \sqrt{x} = 2$ $\sqrt[3]{y} = 2 - \sqrt{x} \Rightarrow y = (2 - \sqrt{x})^3$ تابع است	۲	
الف) $\tan \frac{\pi}{3} = \frac{\sin 60^\circ}{\cos 60^\circ} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$ ب) $\cot \frac{5\pi}{4} = \frac{\cos 225^\circ}{\sin 225^\circ} = \frac{-\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} = 1$ ج) $\tan 330^\circ = \frac{\sin 330^\circ}{\cos 330^\circ} = \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$	د) $\cot 180^\circ = \frac{\cos 180^\circ}{\sin 180^\circ} = \frac{-1}{0}$ تعریف نشده	۳	
الف) $\sin \alpha = \frac{1}{2} \rightarrow 30^\circ, 150^\circ \Rightarrow \frac{\pi}{6}, \frac{5\pi}{6}$ ب) $\cos \alpha = \frac{\sqrt{2}}{2} \rightarrow 45^\circ, 315^\circ \Rightarrow \frac{\pi}{4}, \frac{7\pi}{4}$		۴	
			۵



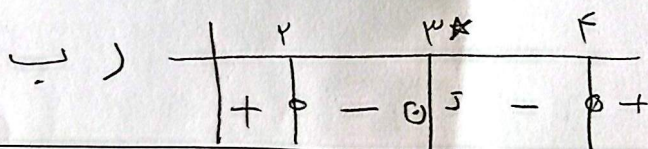
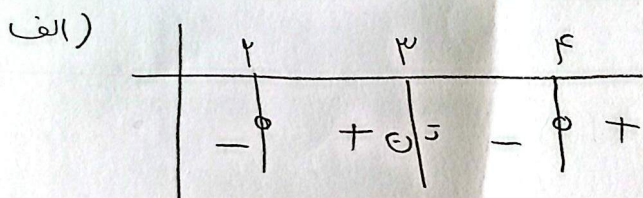
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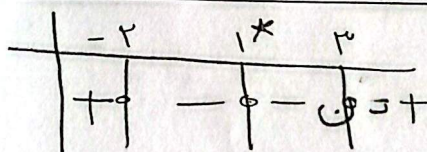
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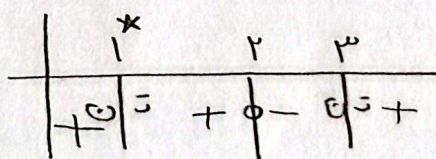
الف) $\frac{(x-1)^2(x+2)}{x-3}$



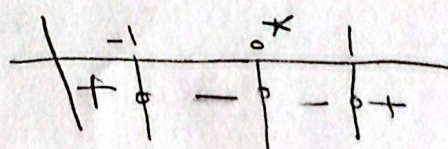
$$\begin{array}{r} x^3 - 3x^2 + 2x + 2 \quad | \quad x-1 \\ -x^3 + x^2 \quad \quad \quad x^2 + x - 2 \\ \hline x^2 - 3x + 2 \quad \quad (x-1)(x+2) \\ -x^2 + x \quad \quad \quad -2x + 2 \\ \hline -2x + 2 \\ +2x - 2 \\ \hline 0 \end{array}$$

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ب) $\frac{(n-1)(n-2)}{(n-1)(n-3)}$



الف) $\frac{x^2(x-1)(x+1)}{x^2+x+2}$



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ب) تابع هیچ ریشه ای ندارد
→ برای همواره
صورتی فردی باشد