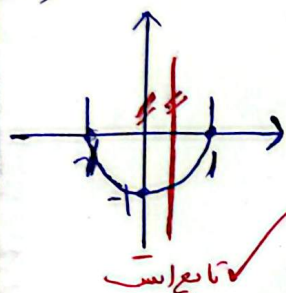


الف) $\begin{cases} y_1^2 = 2x_1^2 - 1 \\ y_2^2 = 2x_2^2 - 1 \end{cases} \Rightarrow y_1 = y_2$ اگر $x_1 = x_2$

ب) $\begin{cases} y_1^2 + y_1 = 3x_1^2 - 1 \\ y_2^2 + y_2 = 3x_2^2 - 1 \end{cases} \Rightarrow y_1 + y_2 = y_2 + y_2$

$\Rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0$

$\Rightarrow \begin{cases} y_1 - y_2 = 0 \Rightarrow y_1 = y_2 \\ y_1^2 - y_1 y_2 + y_2^2 + 1 = 0 \end{cases}$

الف)  تابع است ✓

ب) $|y| = -xy + x^2 + 1$

$\Rightarrow |y| = 0 + 0 + 1$

$\Rightarrow |y| = 1 \Rightarrow y = \pm 1$

ج) $\begin{cases} y_1^2 = x_1^2 + 2x_1 - 1 \\ y_2^2 = -x_2^2 + 2x_2 - 1 \end{cases}$

د) $\sqrt{y} + \sqrt{x} = 2$

$\Rightarrow \begin{cases} \sqrt{y} = -\sqrt{x} + 2 \\ \sqrt{y} = -\sqrt{x} + 2 \end{cases}$

$\Rightarrow y_1 = y_2$

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

ب) $\cot \frac{\pi}{6} = \frac{\cos \frac{\pi}{6}}{\sin \frac{\pi}{6}} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$

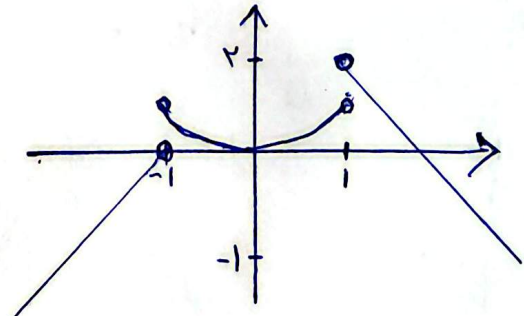
ج) $\tan 45^\circ = \frac{\sin 45^\circ}{\cos 45^\circ} = \frac{\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = 1$

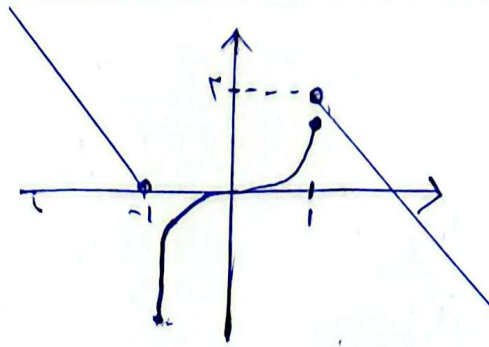
د) $\cot 180^\circ = \frac{\cos 180^\circ}{\sin 180^\circ} = \frac{-1}{0}$ تعریف نشده

الف) $\sin \alpha = \frac{1}{4} \Rightarrow \arcsin \frac{1}{4} = 30^\circ, 150^\circ \Rightarrow \sin \alpha = 2K\pi + \frac{\pi}{6} \text{ و } 2K\pi + \frac{5\pi}{6}$

ب) $\cos \alpha = \frac{\sqrt{2}}{4} \Rightarrow \arcsin \frac{\sqrt{2}}{4} = \frac{\pi}{4}, \frac{3\pi}{4}$

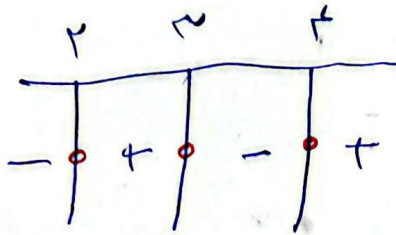
$\Rightarrow \cos \alpha = 2K\pi \pm \frac{\pi}{4}$



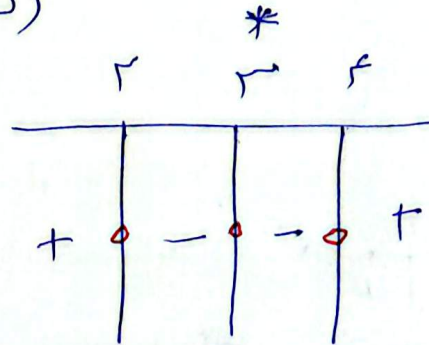


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الف)

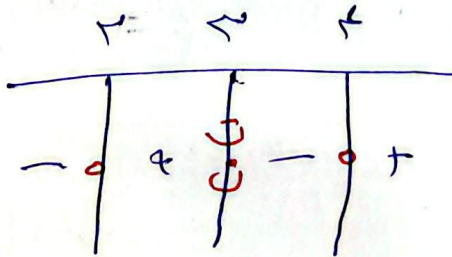


ب)

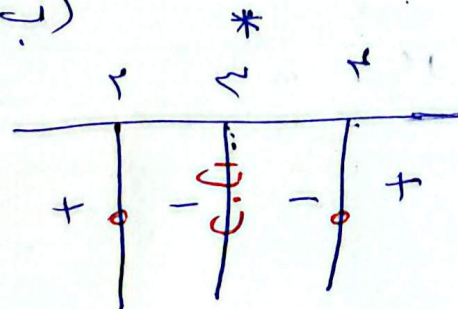


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الف)

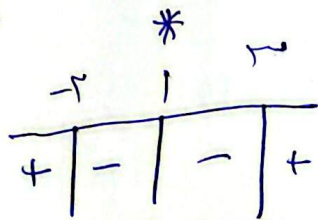


ب)



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الف) $\frac{x^2 - 5x + 6}{x - 3} = \frac{(x+2)(x-1)(x-3)}{x-3}$
 $= \frac{(x+2)(x-1)}{1}$

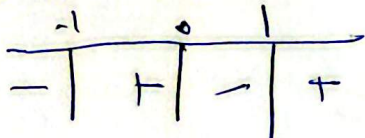


ب) $\frac{x^2 - 5x + 6}{x - 3} = \frac{(x-2)(x-1)}{(x-3)(x-1)}$



9

الف) $\frac{x^2 - x^2}{x^2 + 2x + 3} = \frac{x^2(x+1)}{x^2 + 2x + 3}$
 $= \frac{x^2(x+1)(x-1)}{x^2 + 2x + 3}$
 $\Delta = 1 - 4 = -3 < 0$



ب) $\frac{x^2 + 3x + 2}{x^2 + 11x + 10} \Rightarrow \Delta = 9 - 19 = -10 < 0$
 $\Delta = 121 - 40 = 81 > 0$

عبارت همیشه مثبت است و همیشه نزاد

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