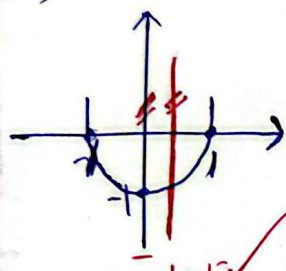


الف) $y_1^2 = 2x_1^2 - 1$
 $y_2^2 = 2x_2^2 - 1$
 $x_1 = x_2$
 $\Rightarrow y_1 = y_2$ ✓

ب) $y_1^2 + y_2^2 = 3x_1^2 - 1$
 $y_2^2 + y_2^2 = 3x_2^2 - 1$
 $\Rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0$
 $\Rightarrow \begin{cases} y_1 - y_2 = 0 \Rightarrow y_1 = y_2 \checkmark \\ y_1^2 - y_1 y_2 + y_2^2 + 1 = 0 \end{cases}$ ✓

الف)  ✓ تابع است

ب) $|y| = -xy + x^2 + 1$
 $\Rightarrow |y| = 0 + 0 + 1$
 $\Rightarrow |y| = 1 \Rightarrow y = \pm 1$ ✗ تابع نیست

ج) $y_1^2 = x_1^2 + 2x_1 - 1$
 $y_2^2 = -x_2^2 + 2x_2 - 1$
 $x_1 = x_2$
 $\Rightarrow y_1 = y_2$ ✓

د) $\sqrt{y} + \sqrt{x} = 2$
 $\Rightarrow \begin{cases} \sqrt{y} = -\sqrt{x} + 2 \\ \sqrt{y} = -\sqrt{x} + 2 \end{cases}$
 $\Rightarrow y_1 = y_2$ ✓ تابع است

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

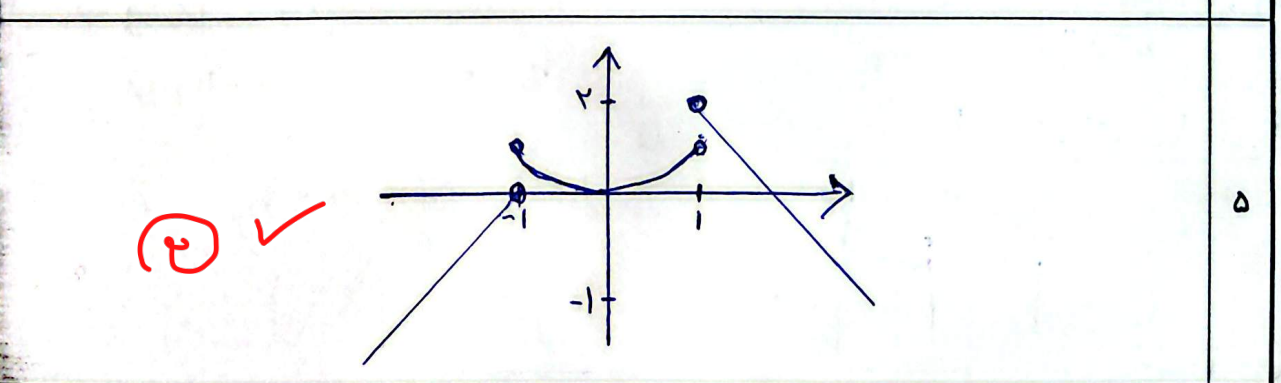
ب) $\cot \frac{\pi}{6} = \frac{\cos \frac{\pi}{6}}{\sin \frac{\pi}{6}} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$ ✓

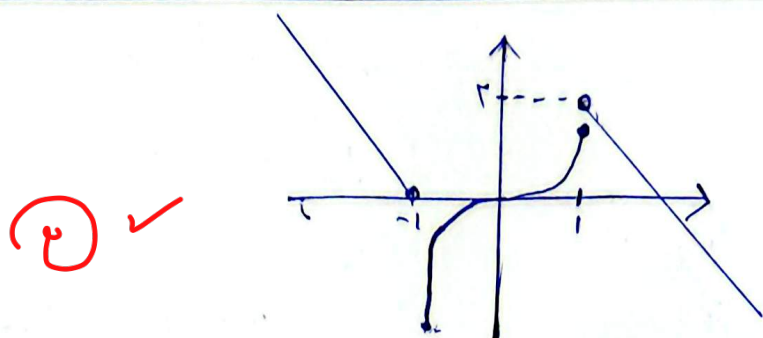
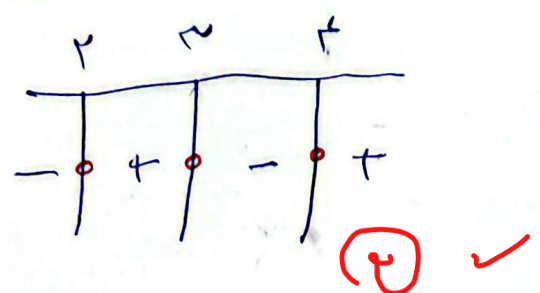
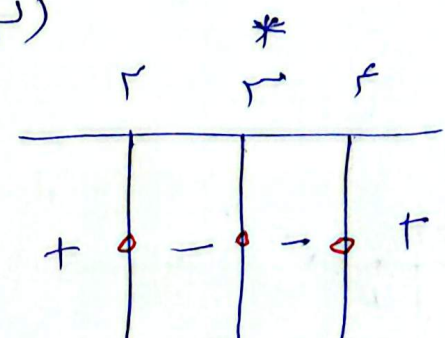
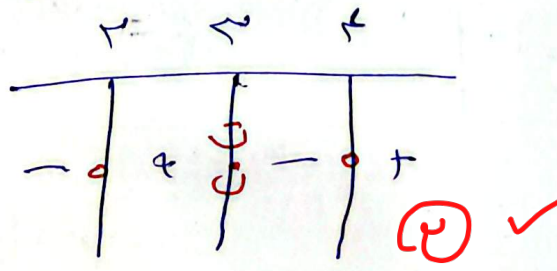
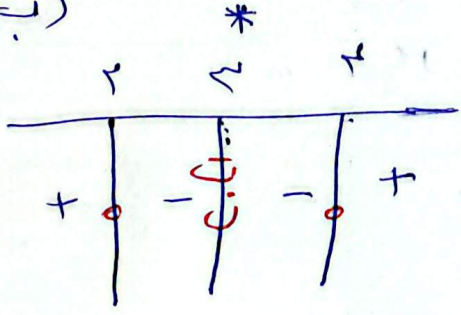
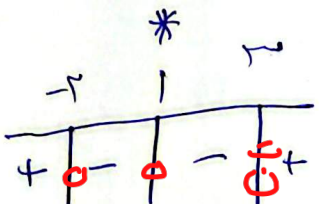
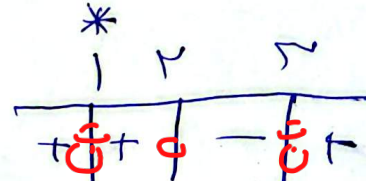
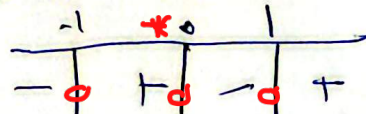
ج) $\tan 45^\circ = \frac{\sin 45^\circ}{\cos 45^\circ} = \frac{\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = 1$ ✓

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



	6
الف) 	ب)  7
الف) 	ب)  8
الف) $\frac{x^2 - 5x + 4}{x - 3} = \frac{(x+2)(x-1)(x-1)}{x-3}$ $= \frac{(x+2)(x-1)^2}{x-3}$ 	ب) $\frac{x^2 - 5x + 4}{x^2 - 4x + 3} = \frac{(x-2)(x-1)}{(x-3)(x-1)}$ 1.5  9
الف) $\frac{x^2 - x^3}{x^2 + 2x + 3} = \frac{x^2(x-1)}{x^2 + 2x + 3}$ $= \frac{x^2(x-1)(x-1)}{x^2 + 2x + 3}$ $\Delta = 1 - 4 = -3 < 0$ 	ب) $\frac{x^2 + 3x + 2}{x^2 + 11x + 3} \Rightarrow \Delta = 9 - 12 = -3 < 0$ $\Delta = 121 - 12 = 109 > 0$ عبارت همیشه مثبت است و همیشه نزاد 1.5 10