

الف) $y^2 = 2x^2 - 1$
 $y_1^2 = 2x_1^2 - 1$ $y_2^2 = 2x_2^2 - 1 \Rightarrow x_1 = x_2 \Rightarrow y_1^2 = y_2^2$
 $\Rightarrow y_1 = \pm y_2 \Rightarrow$ تابع نیست $\times$

ب) $y_1^3 + y_1 = 2x_1^2 - 1$ $y_2^3 + y_2 = 2x_2^2 - 1$ عبارت تابع است
 $y_1^3 + y_1 = y_2^3 + y_2 \Rightarrow y_1^3 + y_1^2 + y_1 - y_2^3 - y_2^2 - y_2 = 0 \Rightarrow y_1 = y_2$

الف) تعریف $y_1 = x_1^2 + 1$ $y_2 = x_2^2 + 1$ $\Rightarrow x_1 = y_1 \Rightarrow y_1 = y_2$ تابع هست ✓

ب) $|y| + 2y = x^2 + 1 \Rightarrow$ تابع هست $\Rightarrow$ بازای هر y یک x

ج) $y^3 + 1 = 2x - x^3 \Rightarrow y = \sqrt[3]{2x - 1 - x^3}$ تابع هست ✓

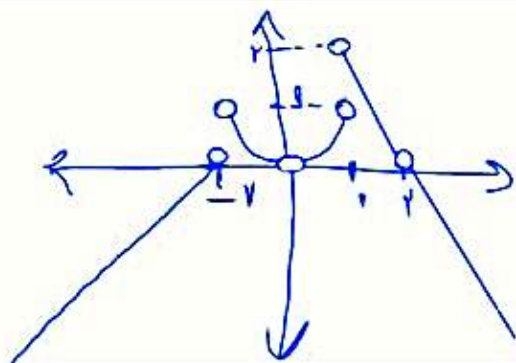
د) $\sqrt[3]{y} + \sqrt[3]{x} = 2$ تابع هست ✓

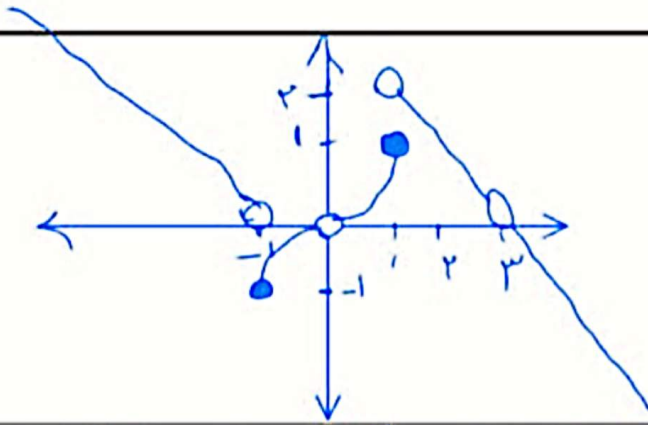
الف) $\tan \frac{\pi}{3} \rightarrow \tan 60^\circ \rightarrow \frac{\sqrt{3}}{1} = \sqrt{3}$

ج) $\tan 2\pi \rightarrow \frac{-\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = -1$ $\Rightarrow \cot 180 = -1$ تعریف نمی شود

$\sin a = \frac{1}{\sqrt{2}} \Rightarrow 30^\circ, 150^\circ \Rightarrow \{2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}\}$

$\cos a = \frac{\sqrt{2}}{2} \Rightarrow 45^\circ, 315^\circ \Rightarrow \{2k\pi + \frac{\pi}{4}, 2k\pi + \frac{7\pi}{4}\}$





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الف) $\rightarrow 2, 3, 4 \rightarrow$ $\frac{2}{-} \frac{3}{+} \frac{4}{-} \frac{5}{+}$
 ب) $2, 3, 4$ $\frac{2}{+} \frac{3}{-} \frac{4}{-} \frac{5}{+}$
 ملاحظه

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الف) $2, 3, 4 \rightarrow$ $\frac{2}{-} \frac{3}{+} \frac{4}{-} \frac{5}{+}$

ب) $2, 3, 4$ $\frac{2}{+} \frac{3}{-} \frac{4}{-} \frac{5}{+}$

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الف) $2, 3, 4 \rightarrow$ $\frac{-\infty}{+} \frac{-1}{-} \frac{1}{+} \frac{2}{-} \frac{+\infty}{+}$
 $(x-1)(x-1)(x+2)$

ب) $y = \frac{(x-2)(x-1)}{(x-3)(x-1)}$ $\frac{1}{+} \frac{2}{+} \frac{3}{-} \frac{4}{+}$
 x
 $1, 2, 3$

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$x^2(x^2-1) \rightarrow x^2(x-1)(x+1)$ $\frac{-1}{-} \frac{0}{+} \frac{1}{-} \frac{1}{+}$
 $x^2 + x + 1$

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ب) ریشه‌ها