

به دلیل نقیض شدن نام نام خانوادگی مندرج شده شما مغفول خواهد شد.

الف) $y_1^3 = 2n_1^2 - 1$ $n_1 = n_2$ $y_1^3 + 1 = y_2^3 + 1 \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ (تابع)

$y_2^3 = 2n_2^2 - 1$

ب) $y_1^3 + y_2^3 = 3n_1^2 - 1$ $n_1 = n_2$ $y_1^3 + y_2^3 + 1 = y_2^3 + y_2^3 + 1 \Rightarrow y_1(y_2 + 1) = y_2(y_2 + 1) \Rightarrow y_1 = y_2$ (تابع است)

$y_2^3 + y_2^3 = 3n_2^2 - 1$

۱/۵ **پاسخ مندرج نیست**

$y_1 = y_2$ **پاسخ مندرج نیست**

الف) $y = n^2 - 1$

ب) $|y_1| + n_1 y_1 = n_1 + 1$ $n_1 = 0$ $|y_1| = 1 \Rightarrow y_1 = \pm 1$ (تابع نیست)

ج) $y_1^3 + n_1^3 = 2n_1 - 1$ $n_1 = n_2$ $y_1^3 + 1 = y_2^3 + 1 \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ (تابع است)

د) $\sqrt[3]{y_1} + \sqrt[3]{n_1} = 2$ $n_1 = n_2$ $\sqrt[3]{y_1} - 2 = \sqrt[3]{y_2} - 2 \Rightarrow \sqrt[3]{y_1} = \sqrt[3]{y_2} \Rightarrow y_1 = y_2$ (تابع است)

الف) $\tan \frac{\pi}{4} = \tan 45^\circ = \frac{\sin 45^\circ}{\cos 45^\circ} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1$ (۳)

ب) $\cot \frac{\sqrt{\pi}}{4} = \cot 210^\circ = \frac{\cos 210^\circ}{\sin 210^\circ} = \frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \frac{\sqrt{3}}{1} = \sqrt{3}$ (۳)

ج) $\tan 330^\circ = \frac{\sin 330^\circ}{\cos 330^\circ} = \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$ (۳)

$\cot 180^\circ = \frac{\cos 180^\circ}{\sin 180^\circ} = \frac{-1}{0}$ **تعریف نشده** (۳)

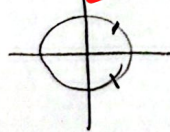
الف) $\sin a = \frac{1}{2}$



$a = \left\{ 2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right\}$ $0 \leq a < 2\pi$

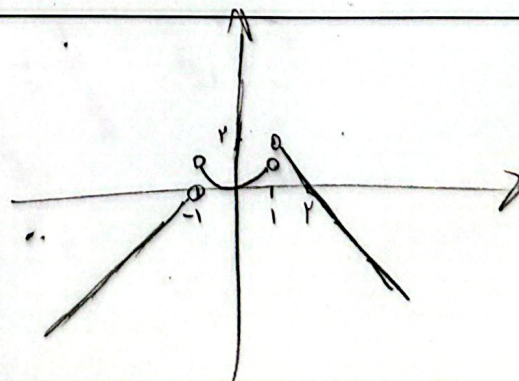
سوال در این بازه خواسته

ب) $\cos a = \frac{\sqrt{2}}{2}$



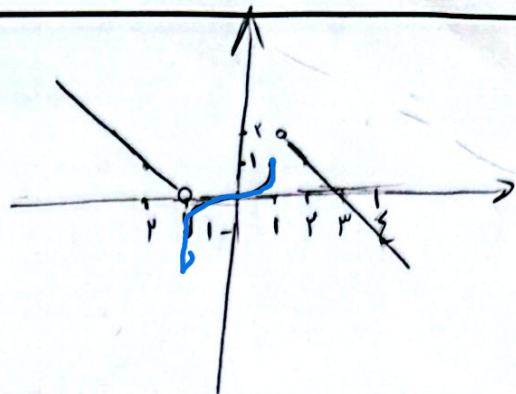
$a = \left\{ 2k\pi + \frac{\pi}{4}, 2k\pi + \frac{7\pi}{4} \right\}$

$f(n) = \begin{cases} -2n+2 & n > 1 \\ n^2 & -1 < n < 1 \\ n+1 & n < -1 \end{cases}$



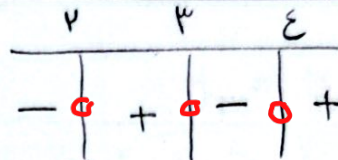
$$f(n) = \begin{cases} -n+2 & n > 1 \\ n^3 & -1 < n < 1 \\ -n-1 & n < -1 \end{cases}$$

$$\begin{matrix} n > 1 \\ -1 < n < 1 \\ n < -1 \end{matrix}$$

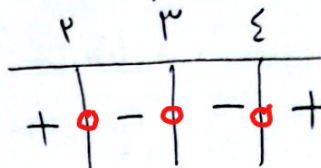


④ ✓

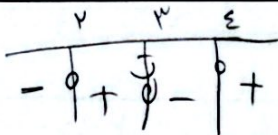
الف) $(n-2)(n-3)(n-4)$



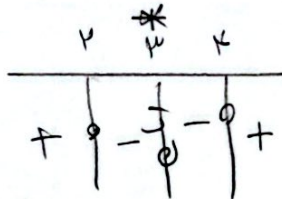
ب) $(n-2)(n-3)^2(n-4)$



الف) $\frac{(n-2)(n-4)}{n-3}$



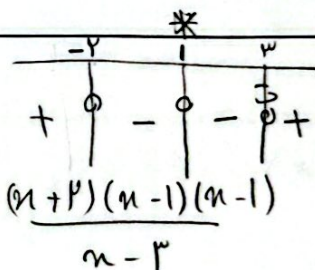
ب) $\frac{(n-2)(n-4)}{(n-3)^2}$



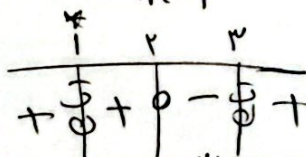
④ ✓

الف) $\frac{n^3-3n+2}{n-3}$

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



ب) $\frac{n^2-3n+2}{n^2-4n+3} = \frac{(n-2)(n-1)}{(n-3)(n-1)}$



④ ✓

الف) $\frac{n^2(n^2-1)}{n^2+n+2} \rightarrow \Delta < 0 \Rightarrow$ مثبت



$b^2-4ac = 1-4 = -3 < 0$

④ ✓

ب) $\frac{n^2+3n+2}{n^2+2n+3} \rightarrow b^2-4ac = 9-12 = -3 < 0 \rightarrow$ همواره مثبت، ریشه ندارد

$\frac{n^2+2n+3}{n^2+2n+3} \rightarrow b^2-4ac = 4-12 = -8 < 0 \rightarrow$ همواره مثبت، ریشه ندارد

n^2+2n+3	+
n^2+3n+2	+
همیشه	+

← ا ب

$$y_1^3 + y_1 = 3x_1^2 - 1$$

$$y_2^3 + y_2 = 3x_2^2 - 1 \xrightarrow{x_1 = x_2}$$

$$y_1^3 + y_1 = 3x_1^2 - 1$$

$$y_2^3 + y_2 = 3x_2^2 - 1$$

$$\rightarrow y_1^3 + y_1 = y_2^3 + y_2 \rightarrow$$

$$\rightarrow (y_1^3 - y_2^3) + (y_1 - y_2) = 0 \rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) + (y_1 - y_2) = 0$$

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

$$y_1 = y_2 \quad \checkmark \rightarrow \text{تابع است}$$

$$y_1^2 + y_1 y_2 + y_2^2 + 1 = 0 \rightarrow \Delta = (y_2)^2 - 4(y_2^2 + 1) = -3y_2^2 + 4 \rightarrow \Delta < 0$$

← ریشه ندارد