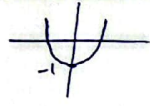


الف) $y^3 = 2x^2 - 1 \rightarrow \begin{cases} y_1^3 = 2x_1^2 - 1 \\ y_2^3 = 2x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ ✓

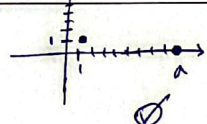
ب) $y^3 + y = 2x^2 - 1 \rightarrow \begin{cases} y_1^3 + y_1 = 2x_1^2 - 1 \\ y_2^3 + y_2 = 2x_2^2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 + y_1 = y_2^3 + y_2 \Rightarrow y_1^3 - y_2^3 + y_1 - y_2 = 0$

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

الف) $y = x^2 - 1$ 

ب) $|y| + xy = x^2 + 1 \xrightarrow{x=0} |y| = 1 \Rightarrow y = \pm 1$ ✓
 مبدئین

ج) $y^3 + x^3 = 2x - 1 \rightarrow \begin{cases} y_1^3 = -x_1^3 + 2x_1 - 1 \\ y_2^3 = -x_2^3 + 2x_2 - 1 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ ✓
 رابطه یابی

د) $\sqrt{y} + \sqrt{x} = 2 \rightarrow \begin{cases} x=0, y=4 \\ x=4, y=0 \\ x=1, y=1 \end{cases}$ 

ب) به کمک رابطه یابی

الف) $\sqrt{y_1} = -\sqrt{x_1} + 2 \xrightarrow{x_1 = x_2} \sqrt{y_1} = \sqrt{y_2} \Rightarrow y_1 = y_2$ ✓
 ب) $\sqrt{y_2} = -\sqrt{x_2} + 2$

الف) $\tan \frac{\pi}{4} = \frac{\sin \frac{\pi}{4}}{\cos \frac{\pi}{4}} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1$ ✓

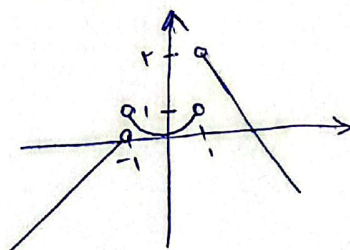
ب) $\cot \frac{\sqrt{\pi}}{2} = \frac{\cos \frac{\sqrt{\pi}}{2}}{\sin \frac{\sqrt{\pi}}{2}} \approx 1.0 = \sqrt{2}$ ✓

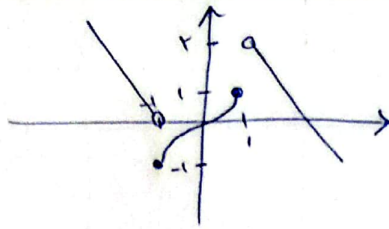
ج) $\tan 45^\circ = -\frac{1}{\sqrt{e}}$

د) $\csc 18^\circ = \frac{\csc}{\sin} = \frac{1}{0}$ ✓

الف) $\sin \alpha = \frac{1}{r} \Rightarrow \alpha = \frac{\pi}{4}, \frac{5\pi}{4}$

ب) $\csc \alpha = \frac{\sqrt{r}}{r} \Rightarrow \alpha = \frac{\pi}{4}, \frac{5\pi}{4}$





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الف) $y = (n-2)(n-3)(n-5)$

$\begin{matrix} 2 & 3 & 5 \\ \textcircled{2} & \textcircled{3} & \textcircled{5} \end{matrix}$

$$\begin{array}{r} 2 \quad 3 \quad 5 \\ - \quad \phi + \phi - \quad \phi + \end{array}$$

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ب) $y = (n-2)(n-3)^2(n-5) = (n-2)(n-3)(n-3)(n-5)$

$\begin{matrix} 2 & 3 & 3 & 5 \\ \textcircled{2} & \textcircled{3} & \textcircled{3} & \textcircled{5} \end{matrix}$

$$\begin{array}{r} 2 \quad 3 \quad 3 \quad 5 \\ + \quad - \quad - \quad + \end{array}$$

الف) $y = \frac{(n-2)(n-5)}{(n-3)}$

$\begin{matrix} 2 & 5 \\ \textcircled{2} & \textcircled{5} \end{matrix}$

$$\begin{array}{r} 2 \quad 3 \quad 5 \\ - \quad \phi + \phi - \quad \phi + \end{array}$$

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ب) $y = \frac{(n-2)(n-5)}{(n-3)^2} = \frac{(n-2)(n-5)}{(n-3)(n-3)}$

$\begin{matrix} 2 & 5 \\ \textcircled{2} & \textcircled{5} \end{matrix}$

$$\begin{array}{r} 2 \quad 3 \quad 3 \quad 5 \\ + \quad \phi - \phi - \quad \phi + \end{array}$$

الف) $y = \frac{n^3 - 3n^2 + 2}{n-3} = \frac{(n-1)^2(n+2)}{(n-3)} = \frac{(n-1)(n-1)(n+2)}{(n-3)}$

$\begin{matrix} 1 & 1 & (-2) \\ \textcircled{1} & \textcircled{1} & \textcircled{-2} \end{matrix}$

$$\begin{array}{r} -2 \quad 1 \quad 2 \\ + \quad \phi - \phi - \quad \phi + \end{array}$$

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

$\begin{matrix} 1 & 2 \\ \textcircled{1} & \textcircled{2} \end{matrix}$

$$\begin{array}{r} 1 \quad 2 \quad 3 \\ - \quad \phi + \phi - \quad \phi + \end{array}$$

الف) $y = \frac{n^5 - n^2}{n^2 + n + 2} \rightsquigarrow n^2(n^3 - 1) = n^2(n+1)(n-1)$

$\begin{matrix} 0 & 1 & (-1) \\ \textcircled{0} & \textcircled{1} & \textcircled{-1} \end{matrix}$

$\Delta = 1 - 1 = 0$

$$\begin{array}{r} -1 \quad 0 \quad +1 \\ - \quad \phi + \phi - \quad \phi + \end{array}$$

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ب) $\frac{n^2 + 3n + 5}{n^2 + 2n + 2} \rightsquigarrow \frac{-9}{-1} = 9$ (مضروب Δ)

$\Delta = 9 - 12 = -3$

$\frac{n^2 + 3n + 5}{n^2 + 2n + 2} \rightsquigarrow \frac{-9}{-1} = 9$ (مضروب Δ)

$\Delta = 9 - 12 = -3$