

الف) $y^3 = 2x^2 - 1 \rightarrow (x_1, y_1) \in f \xrightarrow{x_1 = x_2} y_1 = y_2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1 = y_2$
 $(x_1, y_1) \in f \rightarrow (x_2, y_2) \in f$
 تابع مستقیم است ✓

ب) $y^3 + y = 2x^2 - 1 \rightarrow (x_1, y_1) \in f \xrightarrow{x_1 = x_2} y_1 = y_2 \rightarrow y_1^3 + y_1 = y_2^3 + y_2$
 $(x_1, y_1) \in f \rightarrow (x_2, y_2) \in f$
 $\rightarrow y_1^3 - y_2^3 + y_1 - y_2 = 0 \rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 1) = 0 \rightarrow y_1 - y_2 = 0$
 $\rightarrow y_1 = y_2 \checkmark$ تابع مستقیم است

الف) $y = x^2 - 1 \rightarrow y = (x+1)(x-1)$ تابع مستقیم است ✓

ب) $|y| + xy = x^2 + 1 \xrightarrow{x=0} |y| = 1 \rightarrow y = \pm 1$ تابع مستقیم است ✗

ج) $y^3 + x^3 = 2x - 1 \rightarrow (x_1, y_1) \in f \xrightarrow{x_1 = x_2} y_1 = y_2 \rightarrow y_1^3 + x^3 = 2x - 1$
 $(x_1, y_1) \in f \rightarrow (x_2, y_2) \in f$
 $\rightarrow y_1^3 = y_2^3 \rightarrow y_1 = y_2 \checkmark$ تابع مستقیم است
 د) $\sqrt[3]{y} + \sqrt[3]{x} = 1 \rightarrow \sqrt[3]{y} = 1 - \sqrt[3]{x} \xrightarrow{x=0} \sqrt[3]{y} = 1 \rightarrow y = 1$
 $\xrightarrow{x=1} \sqrt[3]{y} = 0 \rightarrow y = 0$ تابع مستقیم است ✓

الف) $\tan \frac{\pi}{4} \rightarrow \tan 45^\circ \rightarrow 45^\circ \left\{ \begin{array}{l} \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{array} \right. \rightarrow \tan = \frac{\sin}{\cos} \rightarrow \tan 45^\circ = \frac{\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = 1$

ب) $\cot \frac{\sqrt{2}}{2} \rightarrow \cot 45^\circ \rightarrow 45^\circ \left\{ \begin{array}{l} \frac{1}{\sqrt{2}} \\ -\frac{1}{\sqrt{2}} \end{array} \right. \rightarrow \cot = \frac{\cos}{\sin} \rightarrow \cot 45^\circ = \frac{\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = 1$

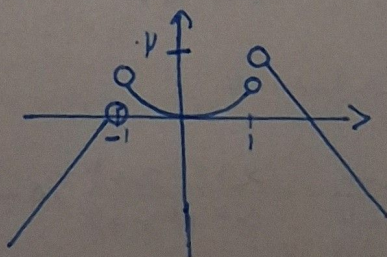
ج) $\tan 135^\circ \rightarrow 135^\circ \left\{ \begin{array}{l} \frac{1}{\sqrt{2}} \\ -\frac{1}{\sqrt{2}} \end{array} \right. \rightarrow \tan 135^\circ = \frac{-\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = -1$ $\sim$ گویا کردن کسر

د) $\cot 180^\circ \rightarrow 180^\circ \left\{ \begin{array}{l} -1 \\ 0 \end{array} \right. \rightarrow \cot = \frac{\cos}{\sin} \rightarrow \frac{-1}{0}$ تعریف نشده

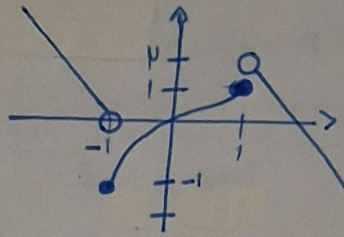
الف) $\sin \alpha = \frac{1}{\sqrt{2}} \rightarrow$ $\rightarrow \sin \alpha = \frac{1}{\sqrt{2}} \rightarrow D_f = \left\{ \frac{\pi}{4}, \frac{3\pi}{4} \right\}$

ب) $\cos \alpha = \frac{\sqrt{2}}{2} \rightarrow$ $\rightarrow \cos \alpha = \frac{\sqrt{2}}{2} \rightarrow D_f = \left\{ \frac{\pi}{4}, \frac{7\pi}{4} \right\}$

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



$$f(x) = \begin{cases} -x + \mu & x > 1 \\ x^\mu & -1 \leq x \leq 1 \\ -x - 1 & x < -1 \end{cases}$$



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الف) $y = (x - \mu)(x - \mu)(x - \mu)$ $\frac{\mu}{-\phi + \phi - \phi +}$

ب) $y = (x - \mu)(x - \mu)^\mu(x - \mu)$ $\frac{\mu}{+\phi - \phi - \phi +}$

٧

الف) $y = \frac{(x - \mu)(x - \mu)}{x - \mu}$ $\frac{\mu}{-\phi + \phi - \phi +}$

ب) $y = \frac{(x - \mu)(x - \mu)}{(x - \mu)^\mu}$ $\frac{\mu}{+\phi - \phi - \phi +}$

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الف) $y = \frac{x^\mu - \mu x + \mu}{x - \mu} = \frac{(x - 1)(x - \mu)}{(x - \mu)^\mu}$ $\frac{\mu}{-\phi + \phi - \phi +}$

ب) $y = \frac{x^\mu - \mu x + \mu}{x^\mu - \mu x + \mu} = \frac{(x - 1)(x - \mu)}{(x - 1)(x - \mu)}$ $\frac{\mu}{+\phi - \phi - \phi +}$

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الف) $y = \frac{x^\mu - x^\mu}{x^\mu + x + \mu} = \frac{x^\mu(x^\mu - 1)}{x^\mu + x + \mu} = \frac{x^\mu(x + 1)(x - 1)}{x^\mu + x + \mu}$ $\frac{\mu}{+\phi - \phi - \phi +}$

$\Delta < 0$
 $\Delta = b^2 - 4ac \rightarrow 1 - 1 = -1$

ب) $y = \frac{x^\mu + \mu x + \mu}{x^\mu + \mu x + \mu} > 0 \rightarrow$ $\Delta < 0$
 $\Delta = q - 1q = -1 \rightarrow \Delta < 0 \rightarrow \Delta = \mu - 1\mu = -1$

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