

الف) $\begin{cases} g_1^3 = 2x_1^2 - 1 \\ g_2^3 = 2x_2^2 - 1 \end{cases} \xRightarrow{x_1=x_2} g_1^3 = g_2^3 \quad g_1 = g_2 \quad \text{تابع}$

ب) $\begin{cases} g_1^3 + g_1 = 2x_1^2 - 1 \\ g_2^3 + g_2 = 2x_2^2 - 1 \end{cases} \xRightarrow{x_1=x_2} g_1^3 + g_1 - g_2^3 - g_2 = 0$
 $(g_1 - g_2)(g_1^2 + g_1g_2 + g_2^2) + (g_1 - g_2) = 0$
 $(g_1 - g_2)(g_1^2 + g_1g_2 + g_2^2 + 1) = 0$
 $\Delta = g_1^2 - 4g_2^2 = -2g_2^2 - 4 < 0$
 $\therefore g_1 = g_2 \quad \text{تابع}$

الف) $\begin{cases} g_1 = x_1^2 - 1 \\ g_2 = x_2^2 - 1 \end{cases} \xRightarrow{x_1=x_2} g_1 = g_2 \quad \text{تابع}$

ب) $x = 0 \quad |g| = 1 \quad g = \pm 1 \quad \text{تابع}$

ج) $\begin{cases} g_1^3 + x_1^3 = 2x_1 - 1 \\ g_2^3 + x_2^3 = 2x_2 - 1 \end{cases} \xRightarrow{x_1=x_2} g_1^3 = g_2^3 \quad g_1 = g_2 \quad \text{تابع}$

د) $x = 0 \quad \sqrt[3]{g} = 2 \quad g = 8 \quad \text{تابع}$

الف) $\frac{\sin}{\cos} = \frac{\frac{\sqrt{2}}{2}}{\frac{1}{2}} = \sqrt{2}$

ب) $\frac{\cos}{\sin} = \frac{-\frac{\sqrt{2}}{2}}{\frac{1}{2}} = -\sqrt{2}$

ج) $\frac{\sin}{\cos} = \frac{\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = 1$

د) $\frac{\cos}{\sin} = \frac{-1}{0} \quad \text{ن.م}$

الف) $a = \frac{\pi}{6}, \frac{5\pi}{6}$

ب) $\frac{\pi}{6}, \frac{5\pi}{6}$



$y = x^2 \quad -1 < x < 1 \quad y = -2x + 1 \quad x > 1$

x	y
0	0
1	1
-1	1

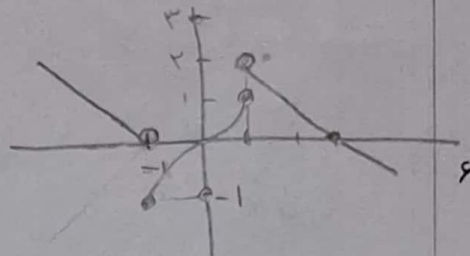
x	y
0	1
1	0
2	-1

$y = x + 1 \quad x < -1$

$$y = -x + 2 \quad x > 1$$

$$y = x^2 \quad \begin{array}{c|c} x & y \\ -1 & -1 \\ 1 & 1 \end{array} \quad -1 \leq x \leq 1$$

$$y = -x - 1 \quad x < -1$$



الف) $x = 2, x = 3, x = 4$

$$\begin{array}{c|c|c|c} 2 & 3 & 4 & \\ \hline - & + & - & + \end{array}$$

ب) $x = 2, x = 3^*, x = 4$
 $x = 3$

$$\begin{array}{c|c|c|c} 2 & 3^* & 4 & \\ \hline + & - & - & + \end{array}$$

الف) $x = 2, x = 4$
 $x = 3$

$$\begin{array}{c|c|c|c} 2 & 3 & 4 & \\ \hline - & + & - & + \end{array}$$

ب) $x = 2, x = 4$
 $x = 3^* \{ x = 3$

$$\begin{array}{c|c|c|c} 2 & 3^* & 4 & \\ \hline + & - & - & + \end{array}$$

الف) $\frac{(x-2)(x-1)}{x-3} \rightarrow 3$

$$\begin{array}{c|c|c|c} 1 & 2 & 3 & \\ \hline - & + & - & + \end{array}$$

ب) $\frac{(x-2)(x-1)}{(x-3)(x-1)} \rightarrow 1$

$$\begin{array}{c|c|c|c} 1^* & 2 & 3 & \\ \hline + & + & - & + \end{array}$$

الف) $\frac{x^2(x^2-1)}{x^2+x+2} \quad x^2 = 0 \quad x^2 = 1 \quad x = \pm 1$

$$\Delta = b^2 - 4ac = 1 - 4 = -3$$

$$\begin{array}{c|c|c|c|c} 0^* & -1 & 1 & & \\ \hline + & + & - & + & \end{array}$$

ب) $x^2 + 2x + 2 \rightarrow \Delta = 4 - 8 = -4$

$$x^2 + 2x + 2 \rightarrow \Delta = 4 - 8 = -4$$

$$\frac{x^2 + 2x + 2}{x^2 + 2x + 2} > 0$$

مشتق اول