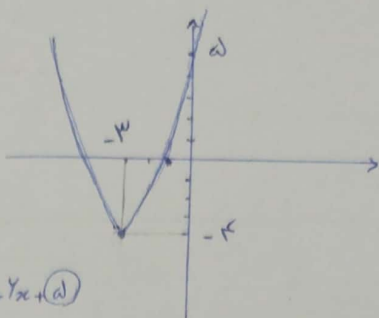
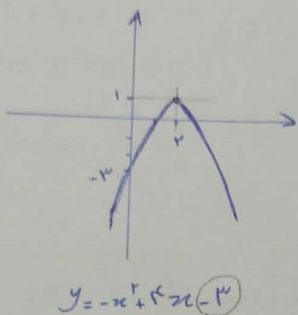


$\alpha > 0 \Rightarrow \text{Min} \begin{cases} -\frac{3}{2} \rightarrow (-\frac{b}{2a}) \\ -\frac{4}{2} \rightarrow (-\frac{\Delta}{4a}) \end{cases}$		$\text{Min} \begin{cases} -\frac{3}{2} \\ -\frac{4}{2} \end{cases}$ (الف)	
$\alpha < 0 \Rightarrow \text{Max} \begin{cases} 1 \\ 1 \end{cases}$ $\frac{-b}{2a} = \frac{-1}{-1} = 1$ $-\frac{\Delta}{4a} = -\frac{b^2 - 4ac}{4a} = -\frac{1 - 4}{-4} = 1$		(الف) $\begin{bmatrix} 3 \\ 0 \end{bmatrix}$ و $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$ (ریشه ها) ← (- ① جمع ضرایب: $y = -x^2 + 2x - 3$ $(-1) + (1) + (-3) = 0$ $\hookrightarrow 1, \frac{c}{a} \Rightarrow 1, \frac{-3}{-1} \Rightarrow 1, 3$ ② جمله شصت: $-(x-1)(x-3) = 0$ $\hookrightarrow 1, 3$	
$\Delta = b^2 - 4ac$ $(-3)^2 - 4(1)(1)$ $= 9 - 4 = 5$	(الف) $\Delta > 0$ $9 - 4\alpha > 0$ $9 > 4\alpha$ $\frac{9}{4} > \alpha$	ب) $\Delta = 0$ $9 - 4\alpha = 0$ $9 = 4\alpha$ $\alpha = \frac{9}{4}$	ج) $\Delta < 0$ $9 - 4\alpha < 0$ $9 < 4\alpha$ $\frac{9}{4} < \alpha$
	د) $\Delta \geq 0$ $9 - 4\alpha \geq 0$ $9 \geq 4\alpha$ $\frac{9}{4} \geq \alpha$		
الف) $x^2 - 2x - 1 = 0$ $x^2 - 2x - 1 + 2 = +2$ $x^2 - 2x + 1 = 2$ $(x-1)^2 = 2$ $\sqrt{(x-1)^2} = \sqrt{2} \rightarrow x-1 = \sqrt{2}$ $\begin{cases} + \rightarrow x = 1 + \sqrt{2} \\ - \rightarrow x = 1 - \sqrt{2} \end{cases}$		ب) $x^2 - x - 1 = 0$ $x^2 - x - 1 + \frac{1}{4} = +\frac{5}{4}$ $x^2 - x + \frac{1}{4} = \frac{5}{4}$ $(x - \frac{1}{2})^2 = \frac{5}{4}$ $(x - \frac{1}{2}) = \pm \frac{\sqrt{5}}{2}$ $\begin{cases} + \rightarrow x = \frac{1 + \sqrt{5}}{2} \\ - \rightarrow x = \frac{1 - \sqrt{5}}{2} \end{cases}$	
الف) $x^2 - 2x - 1 = 0$ $x = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $\Rightarrow x = \frac{2 \pm \sqrt{4 - 4(-1)(1)}}{2 \times 1} = \frac{2 \pm \sqrt{8}}{2} = \frac{2 \pm 2\sqrt{2}}{2}$ $\rightarrow \boxed{1 + \sqrt{2}}, \boxed{1 - \sqrt{2}}$		ب) $x^2 + x - 4 = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow \bar{w}_2$ $\Rightarrow x = \frac{-1 \pm \sqrt{1^2 - 4(-4)(1)}}{2 \times 1} = \frac{-1 \pm \sqrt{17}}{2}$ $\rightarrow \frac{-1 + \sqrt{17}}{2}, \frac{-1 - \sqrt{17}}{2}$	

الف) $x^2 - 11x + 28 = 0$ جمع ضرب $(x-4)(x-7) = 0$ ریشه‌ها $\Rightarrow \boxed{4, 7}$	ب) $x^2 + 3x - 28 = 0$ جمع ضرب $(x+7)(x-4) = 0$ ریشه‌ها $\Rightarrow \boxed{-7, 4}$	۶
الف) $5x^2 - 12x + 4 = 0$ جدا کردن $\Rightarrow x^2 - 12x + 34 = 0$ $(x-4)(x-7) = 0$ $\begin{cases} x=4 \\ x=7 \end{cases} \xrightarrow{\div 5} \begin{cases} x=1 \\ x=\frac{7}{5} \end{cases}$	ب) $3x^2 - 10x + 4 = 0$ جدا کردن $\Rightarrow x^2 - 10x + 21 = 0$ $(x-3)(x-7) = 0$ $\begin{cases} x=3 \\ x=7 \end{cases} \xrightarrow{\div 3} \begin{cases} x=1 \\ x=\frac{7}{3} \end{cases}$	۷
الف) $2x^2 - 4x + 3 = 0$ (جمع ضرایب) $2 + (-4) + 3 = 0 \Rightarrow \begin{cases} \frac{c}{a} = \frac{3}{2} \Rightarrow 1, \frac{3}{2} \end{cases}$	ج) $\rightarrow \Delta = b^2 - 4ac \quad x = \frac{-b \pm \sqrt{\Delta}}{2a}$ $x = \frac{-(-4) \pm \sqrt{4^2 - 4(2)(3)}}{2 \times 2} = \frac{4 \pm \sqrt{16 - 24}}{4}$	۸
ب) $\rightarrow 2 + 3 = 4$ (جمع ضرایب) $\rightarrow \begin{cases} -1 \\ -\frac{c}{a} = -\frac{3}{2} \Rightarrow -1, -\frac{3}{2} \end{cases}$	د) $\rightarrow \Delta = b^2 - 4ac$ $\Delta = 4^2 - 4(2)(3) = 16 - 24 = -8$ $\Delta < 0$ معادله ریشه‌ی حقیقی ندارد	
ع.ج. ریشه $S = \frac{-b}{a}$ ضرب ریشه‌ها $P = \frac{c}{a} \rightarrow S = \frac{-(-3)}{1} = 3, P = \frac{-2}{1} = -2$ الف) $3^2 - 2(-2) = 9 + 4 = 13$ ب) $3^2 - 3(3)(-2) = 9 + 18 = 27$		
الف) $\frac{4 \times 4}{2! \times 2!} + \frac{9 \times 4}{2! \times 2!} = \frac{4 \times 4}{2} + \frac{9 \times 4}{2} = 21 + 36 = 57$ ب) $\frac{4 \times 4 \times 4}{3! \times 1!} - \frac{4 \times 4}{2! \times 2!} = \frac{4 \times 4 \times 4}{6} - \frac{4 \times 4}{2} = 16 - 8 = 8$		