

الف) $u^2 - 4u + 1 = 0 \xrightarrow{+1} u^2 - 4u + 4 = 1 \Rightarrow (u-2)^2 = 1 \Rightarrow u-2 = \pm 1 \Rightarrow u = 2 \pm 1$
 $u-2 = 1 \Rightarrow u = 3$, $u-2 = -1 \Rightarrow u = 1$

ب) $u^2 + 14u + 49 = 0 \xrightarrow{+9} u^2 + 14u + 49 = 9 \Rightarrow (u+7)^2 = 9 \Rightarrow u+7 = \pm 3$
 $u+7 = 3 \Rightarrow u = -4$, $u+7 = -3 \Rightarrow u = -10$

الف) $u^2 - 3u + 4 = 0$ جمع
 $u^2 - 3u = -4 \xrightarrow{\times 4} 4u^2 - 12u = -16 \xrightarrow{+9} 4u^2 - 12u + 9 = -7 \Rightarrow (2u-3)^2 = -7$
 $2u-3 = 0 \Rightarrow u = \frac{3}{2}$

ب) $u^2 - 3u - 14 = 0$ جمع
 $u^2 - 3u = 14 \xrightarrow{\times 4} 4u^2 - 12u = 56 \xrightarrow{+9} 4u^2 - 12u + 9 = 65 \Rightarrow (2u-3)^2 = 65$
 $2u-3 = \pm \sqrt{65} \Rightarrow u = \frac{3 \pm \sqrt{65}}{2}$

الف) $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = u \Rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = u \Rightarrow u^2 - \frac{b}{a}u + \frac{c}{a} = 0 \Rightarrow -\frac{c}{a} \Rightarrow -\frac{c}{a} \times \frac{a}{a} = -\frac{c}{a}$
 $\Rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = u \Rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = u \Rightarrow u = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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الف) $u^2 - 3u + 1 = 0$ جمع
 $u^2 - 3u = -1 \xrightarrow{\times 4} 4u^2 - 12u = -4 \xrightarrow{+9} 4u^2 - 12u + 9 = 5 \Rightarrow (2u-3)^2 = 5$
 $2u-3 = \pm \sqrt{5} \Rightarrow u = \frac{3 \pm \sqrt{5}}{2}$

ب) $u^2 - 3u - 1 = 0$ جمع
 $u^2 - 3u = 1 \xrightarrow{\times 4} 4u^2 - 12u = 4 \xrightarrow{+9} 4u^2 - 12u + 9 = 13 \Rightarrow (2u-3)^2 = 13$
 $2u-3 = \pm \sqrt{13} \Rightarrow u = \frac{3 \pm \sqrt{13}}{2}$

الف) $u^2 - 12u + 36 = 0 \Rightarrow (u-6)^2 = 0 \Rightarrow u-6 = 0 \Rightarrow u = 6$

ب) $u^2 - 10u + 25 = 0 \Rightarrow (u-5)^2 = 0 \Rightarrow u-5 = 0 \Rightarrow u = 5$

الف) $2x^2 - 3x + 1 = 0$ ریشه حقیقی $\Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $\Rightarrow x = \frac{3 \pm \sqrt{9 - 4}}{4}$ $\Rightarrow x = \frac{3 \pm \sqrt{5}}{4}$ ب) $x^2 - 2x + 1 = 0$ ریشه حقیقی $\Rightarrow x = \frac{2 \pm \sqrt{4 - 4}}{2}$ $\Rightarrow x = \frac{2 \pm 0}{2} \Rightarrow x = 1$ ج) $x^2 - 4x + 4 = 0$ ریشه حقیقی $\Rightarrow x = \frac{4 \pm \sqrt{16 - 16}}{2}$ $\Rightarrow x = \frac{4 \pm 0}{2} \Rightarrow x = 2$ د) $x^2 - 5x + 6 = 0$ ریشه حقیقی $\Rightarrow x = \frac{5 \pm \sqrt{25 - 24}}{2}$ $\Rightarrow x = \frac{5 \pm 1}{2} \Rightarrow x = 3, 2$	الف) $2x^2 - 3x + 1 = 0$ ریشه حقیقی $\Rightarrow x = \frac{3 \pm \sqrt{9 - 4}}{4}$ $\Rightarrow x = \frac{3 \pm \sqrt{5}}{4}$ ب) $x^2 - 2x + 1 = 0$ ریشه حقیقی $\Rightarrow x = \frac{2 \pm \sqrt{4 - 4}}{2}$ $\Rightarrow x = \frac{2 \pm 0}{2} \Rightarrow x = 1$ ج) $x^2 - 4x + 4 = 0$ ریشه حقیقی $\Rightarrow x = \frac{4 \pm \sqrt{16 - 16}}{2}$ $\Rightarrow x = \frac{4 \pm 0}{2} \Rightarrow x = 2$ د) $x^2 - 5x + 6 = 0$ ریشه حقیقی $\Rightarrow x = \frac{5 \pm \sqrt{25 - 24}}{2}$ $\Rightarrow x = \frac{5 \pm 1}{2} \Rightarrow x = 3, 2$	الف) $2x^2 - 3x + 1 = 0$ ریشه حقیقی $\Rightarrow x = \frac{3 \pm \sqrt{9 - 4}}{4}$ $\Rightarrow x = \frac{3 \pm \sqrt{5}}{4}$ ب) $x^2 - 2x + 1 = 0$ ریشه حقیقی $\Rightarrow x = \frac{2 \pm \sqrt{4 - 4}}{2}$ $\Rightarrow x = \frac{2 \pm 0}{2} \Rightarrow x = 1$ ج) $x^2 - 4x + 4 = 0$ ریشه حقیقی $\Rightarrow x = \frac{4 \pm \sqrt{16 - 16}}{2}$ $\Rightarrow x = \frac{4 \pm 0}{2} \Rightarrow x = 2$ د) $x^2 - 5x + 6 = 0$ ریشه حقیقی $\Rightarrow x = \frac{5 \pm \sqrt{25 - 24}}{2}$ $\Rightarrow x = \frac{5 \pm 1}{2} \Rightarrow x = 3, 2$	الف) $2x^2 - 3x + 1 = 0$ ریشه حقیقی $\Rightarrow x = \frac{3 \pm \sqrt{9 - 4}}{4}$ $\Rightarrow x = \frac{3 \pm \sqrt{5}}{4}$ ب) $x^2 - 2x + 1 = 0$ ریشه حقیقی $\Rightarrow x = \frac{2 \pm \sqrt{4 - 4}}{2}$ $\Rightarrow x = \frac{2 \pm 0}{2} \Rightarrow x = 1$ ج) $x^2 - 4x + 4 = 0$ ریشه حقیقی $\Rightarrow x = \frac{4 \pm \sqrt{16 - 16}}{2}$ $\Rightarrow x = \frac{4 \pm 0}{2} \Rightarrow x = 2$ د) $x^2 - 5x + 6 = 0$ ریشه حقیقی $\Rightarrow x = \frac{5 \pm \sqrt{25 - 24}}{2}$ $\Rightarrow x = \frac{5 \pm 1}{2} \Rightarrow x = 3, 2$
الف) $y = x^2 + 4x + 5 \Rightarrow y = \frac{x^2}{1} + \frac{4x}{2} + \frac{5}{1} \Rightarrow \text{ext} \left \begin{matrix} -\frac{b}{2a} \\ -\frac{4}{2} \end{matrix} \right = -2$ ب)	الف) $y = x^2 + 4x + 5 \Rightarrow y = \frac{x^2}{1} + \frac{4x}{2} + \frac{5}{1} \Rightarrow \text{ext} \left \begin{matrix} -\frac{b}{2a} \\ -\frac{4}{2} \end{matrix} \right = -2$ ب)	الف) $y = x^2 + 4x + 5 \Rightarrow y = \frac{x^2}{1} + \frac{4x}{2} + \frac{5}{1} \Rightarrow \text{ext} \left \begin{matrix} -\frac{b}{2a} \\ -\frac{4}{2} \end{matrix} \right = -2$ ب)	الف) $y = x^2 + 4x + 5 \Rightarrow y = \frac{x^2}{1} + \frac{4x}{2} + \frac{5}{1} \Rightarrow \text{ext} \left \begin{matrix} -\frac{b}{2a} \\ -\frac{4}{2} \end{matrix} \right = -2$ ب)
الف) $y = -x^2 + 4x - 3 \Rightarrow y = -\frac{x^2}{1} + \frac{4x}{2} - \frac{3}{1} \Rightarrow \text{ext} \left \begin{matrix} -\frac{b}{2a} \\ -\frac{4}{-2} \end{matrix} \right = 2$ ب)	الف) $y = -x^2 + 4x - 3 \Rightarrow y = -\frac{x^2}{1} + \frac{4x}{2} - \frac{3}{1} \Rightarrow \text{ext} \left \begin{matrix} -\frac{b}{2a} \\ -\frac{4}{-2} \end{matrix} \right = 2$ ب)	الف) $y = -x^2 + 4x - 3 \Rightarrow y = -\frac{x^2}{1} + \frac{4x}{2} - \frac{3}{1} \Rightarrow \text{ext} \left \begin{matrix} -\frac{b}{2a} \\ -\frac{4}{-2} \end{matrix} \right = 2$ ب)	الف) $y = -x^2 + 4x - 3 \Rightarrow y = -\frac{x^2}{1} + \frac{4x}{2} - \frac{3}{1} \Rightarrow \text{ext} \left \begin{matrix} -\frac{b}{2a} \\ -\frac{4}{-2} \end{matrix} \right = 2$ ب)
الف) $\frac{x^2}{a} - \frac{3x}{b} - \frac{2}{c} = 0 \Rightarrow S = x_1 + x_2 \Rightarrow P = x_1 \times x_2, S = -\frac{b}{a}, P = \frac{c}{a} \Rightarrow \frac{-2}{-1} = 2$ ب) $S^2 - 2P = 3^2 - 2(-2) = 9 + 4 = 13$	الف) $\frac{x^2}{a} - \frac{3x}{b} - \frac{2}{c} = 0 \Rightarrow S = x_1 + x_2 \Rightarrow P = x_1 \times x_2, S = -\frac{b}{a}, P = \frac{c}{a} \Rightarrow \frac{-2}{-1} = 2$ ب) $S^2 - 2P = 3^2 - 2(-2) = 9 + 4 = 13$	الف) $\frac{x^2}{a} - \frac{3x}{b} - \frac{2}{c} = 0 \Rightarrow S = x_1 + x_2 \Rightarrow P = x_1 \times x_2, S = -\frac{b}{a}, P = \frac{c}{a} \Rightarrow \frac{-2}{-1} = 2$ ب) $S^2 - 2P = 3^2 - 2(-2) = 9 + 4 = 13$	الف) $\frac{x^2}{a} - \frac{3x}{b} - \frac{2}{c} = 0 \Rightarrow S = x_1 + x_2 \Rightarrow P = x_1 \times x_2, S = -\frac{b}{a}, P = \frac{c}{a} \Rightarrow \frac{-2}{-1} = 2$ ب) $S^2 - 2P = 3^2 - 2(-2) = 9 + 4 = 13$