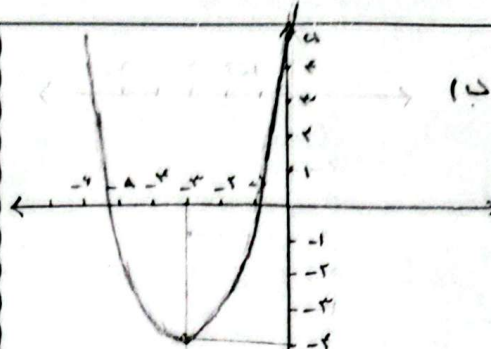
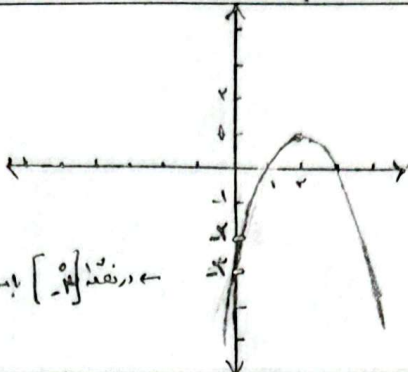


$y = x^2 + 4x + 4 \rightarrow$ محل برقرار باشد $x = \frac{-b}{2a} = \frac{-4}{2} = -2$ الف $y = \frac{-\Delta}{4a} = \frac{-14}{4} = -\frac{7}{2}$ $\Delta = b^2 - 4ac$ $\Delta = 16 - 4 \times 1 \times 4 = 0$ $\text{ext} \begin{vmatrix} -2 \\ -\frac{7}{2} \end{vmatrix}$ نوع min شکل U		۱	
$y = -x^2 + 4x - 4 \rightarrow$ محل برقرار باشد $\text{ext} \begin{vmatrix} 2 \\ 1 \end{vmatrix} \rightarrow \text{Max}$ $x = \frac{-b}{2a} = \frac{-4}{-2} = 2$ $y = \frac{-\Delta}{4a} = \frac{-4}{-4} = 1$ $\Delta = 16 - 4 \times 1 \times 4 = 0$ در نقطه (2, 1) به هم می‌رسد		$0 = -x^2 + 4x - 4$ (ب) if $\nearrow$ $-x^2 + 4x = 4$ $x(-x + 4) = 4$ $x = 4, x = 1$ در نقاط $\begin{bmatrix} 4 \\ 0 \end{bmatrix}$ و $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$	
$\Delta > 0$ (د) ریشه داشته باشد $9 - 16a > 0$ $\frac{9}{16} > a$ هر مقدار که از این کمتر و داشته باشد	$\Delta < 0$ (ج) فاقد ریشه حقیقی $\Delta = 9 - 16a$ $9 - 16a < 0$ $a > \frac{9}{16}$ مثلاً: $2m^2 - 3m + 2 = 0$ $\Delta = 9 - 4 \times 2 \times 2 = -7$	$\Delta = 0$ (ب) یک ریشه مضاعف $\Delta = 9 - 16a = 0$ $a = \frac{9}{16}$ $2m^2 - 3m + \frac{9}{16} = 0$ $(\sqrt{2}x - \frac{3}{2\sqrt{2}})^2 = 0$ $x = \frac{3}{4}$	$\Delta > 0$ (الف) در شرایط خاص $\Delta = b^2 - 4ac \rightarrow \Delta = 9 - 4 \times 1 \times a$ $\Delta = 9 - 16a$ $9 - 16a > 0$ $a < \frac{9}{16}$ $\rightarrow \frac{9}{16} > a$ مثلاً: $2m^2 - 3m + 1 = 0$ $m^2 - 3m + 2 = 0$ $(m-1)(m-2) = 0 \rightarrow m = 1, 2$
$(\text{الف}) \quad x^2 - 2m - 1 = 0 \xrightarrow{+2} x^2 - 2mx + 1 = 2 \rightarrow (x-1)^2 = 2 \quad x-1 = \sqrt{2} \rightarrow x = \sqrt{2} + 1$ $x-1 = -\sqrt{2} \rightarrow x = 1 - \sqrt{2}$ $(\text{ب}) \quad x^2 - m - 1 = 0 \xrightarrow{+\frac{1}{x}} x^2 - m + \frac{1}{x} = \frac{1}{x} \rightarrow (x - \frac{1}{x})^2 = \frac{1}{x}$ $x - \frac{1}{x} = \frac{\sqrt{1}}{x} \rightarrow x = \frac{\sqrt{1} + 1}{x}$ $x - \frac{1}{x} = -\frac{\sqrt{1}}{x} \rightarrow x = \frac{-\sqrt{1} + 1}{x}$			
$(\text{الف}) \quad x^2 - 2m - 1 = 0$ $\Delta = b^2 - 4ac = 4 - 4 \times 1 \times (-1) = 8$ $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$ $\frac{1+\sqrt{2}}{2} = \frac{x(1+\sqrt{2})}{x} = 1+\sqrt{2}$ $\frac{1-\sqrt{2}}{2} = \frac{x(1-\sqrt{2})}{x} = 1-\sqrt{2}$ $(\text{ب}) \quad x^2 + x - 1 = 0$ $\Delta = b^2 - 4ac = 1 - 4 \times 1 \times (-1) = 5$ $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{5}}{2}$ $\frac{-1+\sqrt{5}}{2}$ $\frac{-1-\sqrt{5}}{2}$			

الف) $x^2 - 11x + 28 = 0$ $(x-4)(x-7) = 0$ $\underline{x=4}, \underline{x=7}$	ب) $x^2 + 3m - 28 = 0$ $(x-4)(x+7) = 0$ $\underline{x=4}, \underline{x=-7}$	4
الف) $x^2 - 12m + 5 = 0$ $x^2 - 12m + 5 = 0$ $(x-5)(x-1) = 0$ $\underline{x=5}, \underline{x=1}$	ب) $x^2 - 10x + 21 = 0$ $x^2 - 10x + 21 = 0$ $(x-3)(x-7) = 0$ $\underline{x=3}, \underline{x=7}$	5
الف) $2m^2 - 5m + 3 = 0$ $2m^2 - 5m + 3 = 0$ $\Delta = b^2 - 4ac = 25 - 24 = 1$ $m = \frac{5 \pm 1}{4} = \frac{6}{4} = \frac{3}{2}, \frac{4}{4} = 1$	ب) $2m^2 - 5m + 3 = 0$ $\Delta = b^2 - 4ac = 25 - 24 = 1$ $m = \frac{5 \pm 1}{4} = \frac{6}{4} = \frac{3}{2}, \frac{4}{4} = 1$	6
الف) $S^2 - 2P = 1 - \frac{b^2}{a^2} - \frac{2c}{a} = 1 - \frac{3}{1} - \frac{2}{1} = 9 + 8 = 17$	ب) $S^2 - 2SP = 1 - \frac{b^2}{a^2} - 2 \times \frac{b}{a} \times \frac{c}{a} = 1 - \frac{3}{1} - 2 \times \frac{3}{1} \times \frac{2}{1} = 17 + 12 = 29$	7
الف) $\begin{pmatrix} 5 \\ 2 \end{pmatrix} + \begin{pmatrix} 9 \\ 2 \end{pmatrix} = \frac{5 \times 9 \times 2}{2 \times 2 \times 2} + \frac{9 \times 2 \times 5}{2 \times 2 \times 2} = 21 + 24 = 45$	ب) $\begin{pmatrix} 9 \\ 2 \end{pmatrix} - \begin{pmatrix} 1 \\ 2 \end{pmatrix} = \frac{9 \times 1 \times 2}{2 \times 2 \times 2} - \frac{1 \times 2 \times 9}{2 \times 2 \times 2} = 14 - 21 = -7$	8