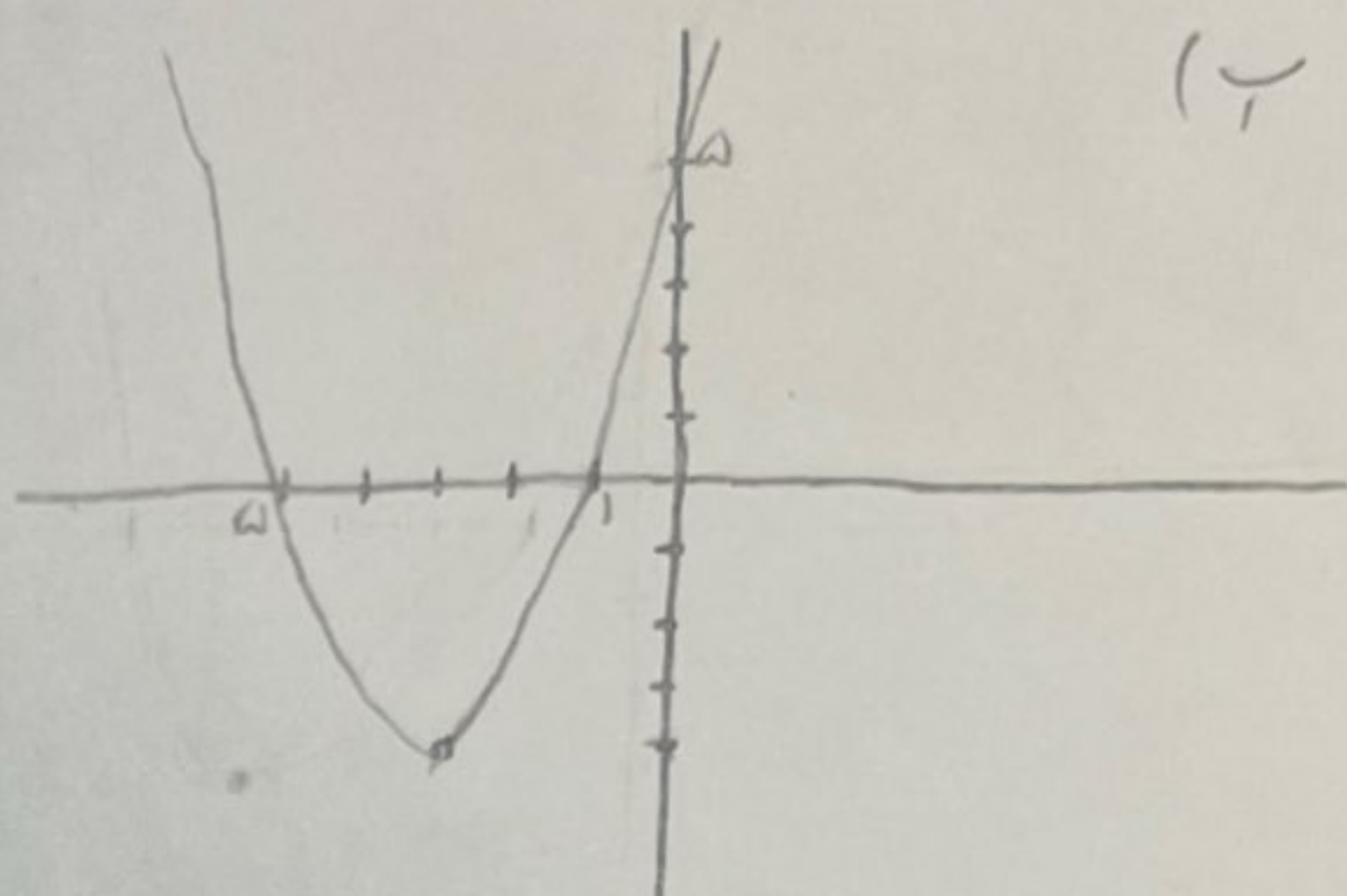
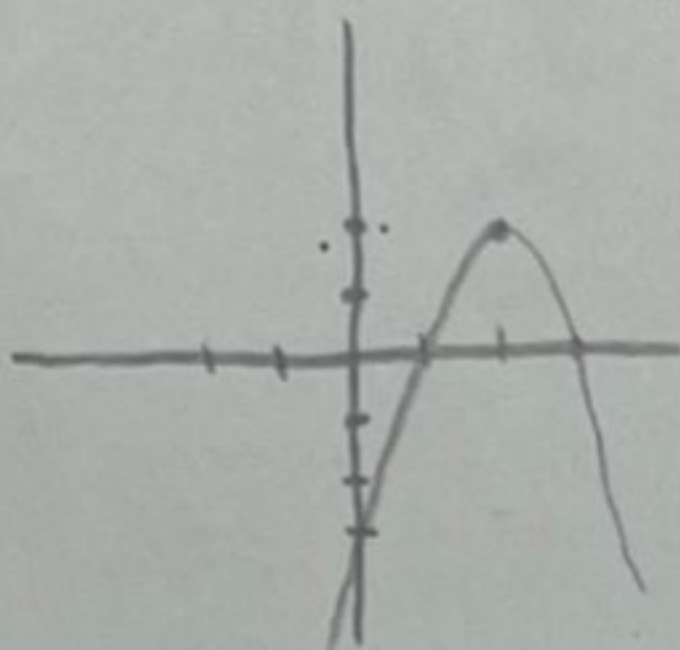


$y = x^2 + 6x + 4$ $\text{Min} \left \begin{array}{l} -\frac{b}{2a} = \frac{-6}{2} = -3 \\ 1 - 18 + 4 = -13 \end{array} \right.$ $(-3, -13)$ سپری رو به بالا (Min)	(الف)		(ب)				
$y = -x^2 + 4x - 3$ $\text{Max} \left \begin{array}{l} -\frac{b}{2a} = \frac{-4}{-2} = 2 \\ -4 + 16 - 3 = 9 \end{array} \right.$ $(2, 9)$ سپری رو به پایین (Max)	(الف)		$y = -x^2 + 4x - 3$ $y = 0 \downarrow$ $-x^2 + 4x - 3 = 0$ $x^2 - 4x + 3 = 0$ $(x-1)(x-3) = 0$ $\Downarrow$ $x = 1$ $x = 3$ نقاط $(1, 0)$ و $(3, 0)$	(ب)			
$2x^2 - 3x + a = 0$ $\Delta = b^2 - 4ac > 0$ $\Delta = (-3)^2 - 4(2)(a) = 9 - 8a$ $9 - 8a > 0 \rightarrow -8a > -9$ $a < \frac{9}{8}$	(الف)	$2x^2 - 3x + a = 0$ $\Delta = b^2 - 4ac = 0$ $\Delta = (-3)^2 - 4(2)(a) = 0$ $9 - 8a = 0$ $8a = 9$ $a = \frac{9}{8}$	$2x^2 - 3x + a = 0$ $\Delta = b^2 - 4ac < 0$ $\Delta = (-3)^2 - 4(2)(a) < 0$ $9 - 8a < 0$ $-8a < -9$ $a > \frac{9}{8}$	(ج)	$2x^2 - 3x + a = 0$ $\Delta = b^2 - 4ac \geq 0$ $\Delta = (-3)^2 - 4(2)(a) \geq 0$ $9 - 8a \geq 0$ $-8a \geq -9$ $a \leq \frac{9}{8}$	(د)	
$x^2 - 2x - 1 = 0$ $x^2 - 2x = 1 + 2 = 3$ $x^2 - 2x + 1 = 3$ $(x-1)^2 = 3$ $x-1 = \pm\sqrt{3}$ $x = 1 \pm \sqrt{3}$	(الف)	$x^2 - 2x - 1 = 0$ $x^2 - 2x - 1 + \frac{1}{4} = \frac{1}{4}$ $x^2 - 2x + \frac{1}{4} = \frac{1}{4}$ $\left(x - \frac{1}{2}\right)^2 = \frac{1}{4}$ $x - \frac{1}{2} = \pm\sqrt{\frac{1}{4}} \Rightarrow x = \frac{1 \pm \sqrt{1}}{2}$		(ب)			
$x^2 - 2x - 1 = 0$ $\Delta = b^2 - 4ac$ $\Delta = 4 - 4(1)(-1) = 4 + 4 = 8$ $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2 \pm 2\sqrt{2}}{2} = 1 \pm \sqrt{2}$	(الف)	$x^2 + x - 4 = 0$ $\Delta = b^2 - 4ac$ $\Delta = 1 - 4(1)(-4) = 1 + 16 = 17$ $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{17}}{2}$					

$x^2 - 11x + 28 = 0$ $(x - 4)(x - 7) = 0$ $\boxed{x = 7}$ $\boxed{x = 4}$	$x^2 + 3x - 28 = 0$ $(x - 4)(x + 7) = 0$ $\boxed{x = 4}$ $\boxed{x = -7}$	9		
$5x^2 - 12x + 7 = 0$ $5 \times 7 = 35$ $5x^2 - 7x - 4x + 28 = 0$ $(5x - 7)(x - 4) = 0$ $5x - 7 = 0 \rightarrow \boxed{x = \frac{7}{5}}$ $x - 4 = 0 \rightarrow \boxed{x = 4}$	$3x^2 - 10x + 7 = 0$ $3 \times 7 = 21$ $3x^2 - 7x - 3x + 21 = 0$ $(3x - 7)(x - 3) = 0$ $3x - 7 = 0 \rightarrow \boxed{x = \frac{7}{3}}$ $x - 3 = 0 \rightarrow \boxed{x = 3}$	7		
$2x^2 - 4x + 3 = 0$ $2 \times 3 = 6$ $2x^2 - 2x + 2x + 3 = 0$ $(2x - 3)(x - 1) = 0$ $\boxed{x = 1}$ $\boxed{x = \frac{3}{2}}$	$2x^2 + 4x + 3 = 0$ $2 \times 3 = 6$ $2x^2 + 2x + 2x + 3 = 0$ $(2x + 3)(x + 1) = 0$ $\boxed{x = -1}$ $\boxed{x = -\frac{3}{2}}$	$2x^2 - 4x + 1 = 0$ $\Delta = b^2 - 4ac$ $\Delta = 16 - 4(2)(1) = 12$ $x = \frac{-b \pm \sqrt{\Delta}}{2a}$ $\boxed{x = \frac{2 \pm \sqrt{12}}{4}}$	$4x^2 + 7x + 9 = 0$ $\Delta = b^2 - 4ac$ $\Delta = 49 - 4(4)(9) = -96$ ریشه حقیقی ندارد	1
$x^2 - 3x - 2 = 0$ $\Delta = b^2 - 4ac$ $\Delta = 9 - 4(1)(-2) = 17$ $x_1 = \frac{3 + \sqrt{17}}{2}, x_2 = \frac{3 - \sqrt{17}}{2}$ $P = x_1 \cdot x_2 = \frac{3 + \sqrt{17}}{2} \times \frac{3 - \sqrt{17}}{2} = \frac{9 - 17}{4} = -\frac{8}{4} = -2$ $S = x_1 + x_2 = \frac{3 + \sqrt{17}}{2} + \frac{3 - \sqrt{17}}{2} = \frac{6}{2} = 3$ الف) $S^2 - 2P = 3^2 - 2(-2) = 9 + 4 = \boxed{13}$ ب) $S^3 - 3SP = 3^3 - 3(3)(-2) = 27 + 18 = \boxed{45}$				9
$\binom{9}{0} = \frac{9!}{0!(9-0)!} = \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{1 \times 1} = 362880$ $\binom{9}{1} = \frac{9!}{1!(9-1)!} = \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{1 \times 1 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1} = 9$ $\binom{9}{2} = \frac{9!}{2!(9-2)!} = \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{2 \times 1 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1} = 36$ $\binom{9}{0} + \binom{9}{1} = 362880 + 9 = \boxed{362889}$	$\binom{9}{3} = \frac{9!}{3!(9-3)!} = \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{3 \times 2 \times 1 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1} = 84$ $\binom{9}{4} = \frac{9!}{4!(9-4)!} = \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{4 \times 3 \times 2 \times 1 \times 5 \times 4 \times 3 \times 2 \times 1} = 126$ $\binom{9}{3} - \binom{9}{4} = 84 - 126 = \boxed{-42}$	10		