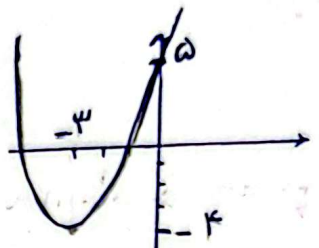
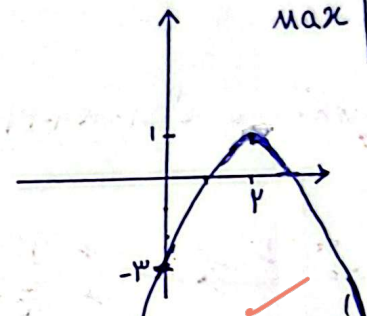


الف) Min (مینیمم) $\left. \begin{aligned} -\frac{b}{2a} &= -\frac{4}{2} = -2 \\ -\frac{\Delta}{4a} &= -1 \end{aligned} \right\} \Rightarrow \text{Min} \begin{cases} -2 \\ -1 \end{cases}$ ✓



ب) ✓

الف) $y = -(x-1)(x-3) \Rightarrow 0 = (x-1)(x-3)$ ب) $\Rightarrow \begin{cases} x=1 \\ x=3 \end{cases}$ ✓



الف) $\max \begin{cases} 2 \\ 1 \end{cases}$ ✓

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الف) $b^2 - 4ac < 0 \Rightarrow 9 - 4a < 0 \Rightarrow 9 < 4a \Rightarrow \frac{9}{4} < a$ ✓

ب) $b^2 - 4ac > 0 \Rightarrow 9 - 4a > 0 \Rightarrow 9 > 4a \Rightarrow a < \frac{9}{4}$ ✓

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الف) $b^2 - 4ac \geq 0 \Rightarrow 9 - 4a \geq 0 \Rightarrow a \leq \frac{9}{4}$ ✓

ب) $b^2 - 4ac = 0 \Rightarrow 9 - 4a = 0 \Rightarrow 4a = 9 \Rightarrow a = \frac{9}{4}$ ✓

الف) $x^2 - 2x - 1 = 0 \xrightarrow{+2} x^2 - 2x + 1 = 2 \Rightarrow (x-1)^2 = 2 \Rightarrow \begin{cases} x-1 = \sqrt{2} \Rightarrow x = 1 + \sqrt{2} \\ x-1 = -\sqrt{2} \Rightarrow x = 1 - \sqrt{2} \end{cases}$ ✓

ب) $x^2 - x - 1 = 0 \xrightarrow{+\frac{1}{4}} x^2 - x + \frac{1}{4} = \frac{5}{4} \Rightarrow (x - \frac{1}{2})^2 = \frac{5}{4} \Rightarrow \begin{cases} x - \frac{1}{2} = \frac{\sqrt{5}}{2} \Rightarrow x = \frac{1 + \sqrt{5}}{2} \\ x - \frac{1}{2} = -\frac{\sqrt{5}}{2} \Rightarrow x = \frac{1 - \sqrt{5}}{2} \end{cases}$ ✓

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الف) $x^2 - 2x - 1 = 0$
 $\Delta = b^2 - 4ac = 4 - 4(-1)(1) = 8$
 $\frac{-b + \sqrt{\Delta}}{2a} = \frac{2 + \sqrt{8}}{2} = \frac{2 + 2\sqrt{2}}{2} = 1 + \sqrt{2}$ ✓
 $\frac{-b - \sqrt{\Delta}}{2a} = \frac{2 - \sqrt{8}}{2} = \frac{2 - 2\sqrt{2}}{2} = 1 - \sqrt{2}$ ✓

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ب) $x^2 + x - 4 = 0$
 $\Delta = b^2 - 4ac = 1 + 16 = 17$
 $\frac{-b + \sqrt{\Delta}}{2a} = \frac{-1 + \sqrt{17}}{2}$ ✓
 $\frac{-b - \sqrt{\Delta}}{2a} = \frac{-1 - \sqrt{17}}{2}$ ✓

الف) $x^2 - 11x + 28 = 0 \Rightarrow (x-4)(x-7) = 0 \Rightarrow \begin{cases} x=4 \\ x=7 \end{cases}$ ✓

ب) $x^2 + 3x - 28 = 0 \Rightarrow (x+7)(x-4) = 0 \Rightarrow \begin{cases} x=-7 \\ x=4 \end{cases}$ ✓
 ← مجموع ضرب

الف) $5x^2 - 12x + 7 = 0 \Rightarrow x^2 - 12x + 35 = 0 \Rightarrow (x-5)(x-7) = 0 \Rightarrow \begin{cases} x=5 \\ x=7 \end{cases}$ ✓
 ← $\frac{a}{b} = \frac{c}{d} \Rightarrow \frac{5}{7} = 1$

ب) $3x^2 - 10x + 7 = 0 \Rightarrow x^2 - 10x + 21 = 0 \Rightarrow (x-3)(x-7) = 0 \Rightarrow \begin{cases} x=3 \\ x=7 \end{cases}$ ✓
 ← $\frac{a}{b} = \frac{c}{d} \Rightarrow \frac{3}{7} = 1$

الف) $2x^2 - 5x + 3 = 0 \Rightarrow \begin{cases} x=1 \\ x=1.5 \end{cases}$ ✓
 ← مجموع ضرب

ب) $2x^2 + 5x + 3 = 0 \Rightarrow \begin{cases} x=-1 \\ x=-1.5 \end{cases}$ ✓
 ← مجموع ضرب

ج) $2x^2 - 5x + 1 = 0 \Rightarrow b^2 - 4ac = 25 - 4 = 21 \Rightarrow \begin{cases} \frac{5 + \sqrt{21}}{4} \\ \frac{5 - \sqrt{21}}{4} \end{cases}$ ✓

د) $2x^2 + 7x + 9 = 0 \Rightarrow b^2 - 4ac = 49 - 72 = -23 \Rightarrow$ معادلة غير حقيقية ✓

$S = -\frac{b}{a} = 3$ ✓

$P = \frac{c}{a} = -2$ ✓

الف: $S^2 - 2P \Rightarrow 9 + 4 = 13$ ✓

ب: $S^3 - 3SP \Rightarrow 27 - 3(9)(-2) = 81$ ✓

الف) $\binom{5}{2} + \binom{9}{2} = \frac{5 \times 4 \times 3!}{2 \times 1 \times 3!} + \frac{9 \times 8 \times 7!}{2 \times 1 \times 7!} = 24$ ✓

$\frac{5 \times 4 \times 3!}{2! \times 1!}$

$\binom{m}{n} = \frac{m!}{n! \times (m-n)!}$

ب) $\binom{9}{3} - \binom{1}{2} = \frac{9 \times 8 \times 7 \times 6!}{3 \times 2 \times 1 \times 6!} - \frac{1 \times 1 \times 0!}{2 \times 1 \times 0!} = 84 - 1 = 83$ ✓