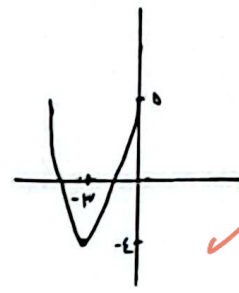
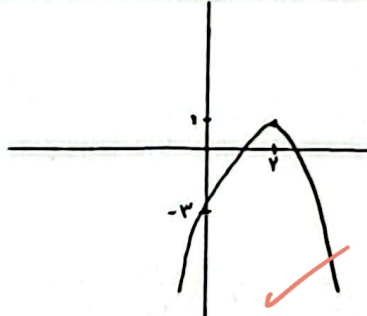


$y = x^2 + 4x + 5$ $x = \frac{-b}{2a}$ $= \frac{-4}{2} = -2$ ✓ $y = (-2)^2 + 4(-2) + 5 = -1$ ✓	$\text{Min} \begin{cases} -3 \\ -4 \end{cases}$ ✓		۱
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$y = -x^2 + 4x - 3$ $\xrightarrow{\text{دست فروریخته}}$ $x^2 - 4x + 3 = 0$ $x = \frac{-b}{2a} = \frac{-(-4)}{2(-1)} = 2$ ✓ $y = -(2)^2 + 4(2) - 3 = 1$ ✓ $\Rightarrow \text{Max} \begin{cases} 2 \\ 1 \end{cases}$ ✓	$(x-3)(x-1) = 0$ $\Rightarrow x = \begin{cases} 3 \\ 1 \end{cases}$ ✓		۲
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$\Delta = b^2 - 4ac$ $= 9 - 12a$ ✓	الف) $\Delta > 0$ ✓ $\Rightarrow a < \frac{3}{4}$ ب) $\Delta = 0$ ✓ $\Rightarrow a = \frac{3}{4}$ ج) $\Delta < 0$ ✓ $\Rightarrow a > \frac{3}{4}$	$\Delta > 0$ $\Rightarrow a < \frac{3}{4}$ ✓	۳
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الف) $x^2 - 2x - 1 = 0$ $x^2 - 2x + 1 = 2$ ✓ $(x-1)^2 = 2$ $x-1 = \pm\sqrt{2}$ $x = \begin{cases} \sqrt{2}+1 \\ -\sqrt{2}+1 \end{cases}$ ✓	ب) $x^2 - x - 1 = 0$ $\Delta x(x^2 - x - 1 = 0)$ $\Delta x^2 - \Delta x - \Delta = 0$ $\Delta x^2 - \Delta x + 1 = 0$ $(\Delta x - 1)^2 = 0$ $\Delta x - 1 = \pm\sqrt{0}$ ✓ $\Delta x = -1 \pm\sqrt{0}$ ✓ $x = \begin{cases} \frac{-1+\sqrt{0}}{2} \\ \frac{-1-\sqrt{0}}{2} \end{cases}$ ✓	۴
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الف) $x^2 - 2x - 1 = 0$ $\frac{-b \pm \sqrt{\Delta}}{2a}$ $\Delta = b^2 - 4ac$ $= 4 + 4 = 8$	$\Rightarrow x = \begin{cases} \frac{2+\sqrt{8}}{2} \\ \frac{2-\sqrt{8}}{2} \end{cases}$ ✓	ب) $x^2 + x - 4 = 0$ $\Delta = (1)^2 - 4(-4)(1) = \sqrt{17}$ ✓ $x = \begin{cases} \frac{-1+\sqrt{17}}{2} \\ \frac{-1-\sqrt{17}}{2} \end{cases}$ ✓	۵
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$\text{الف) } x^2 - 11x + 21 = 0$ $(x-7)(x-3) = 0$ $x-7=0 \Rightarrow x=7 \quad \checkmark$ $x-3=0 \Rightarrow x=3 \quad \checkmark$	$\text{ب) } x^2 + 2x - 21$ $(x+7)(x-3) = 0$ $x+7=0 \Rightarrow x=-7 \quad \checkmark$ $x-3=0 \Rightarrow x=3 \quad \checkmark$	٤
$\text{الف) } 5x^2 - 12x + 7 = 0$ $x^2 - 12x + 35 = 0 \quad \checkmark$ $(x-7)(x-5) = 0$ $x = \begin{cases} \frac{7}{5} \quad \checkmark \\ 1 \quad \checkmark \end{cases}$	$\text{ب) } 3x^2 - 10x + 7 = 0$ $x^2 - 10x + 21 = 0 \quad \checkmark$ $(x-7)(x-3) = 0 \quad \checkmark$ $x = \frac{7}{3} \rightarrow \frac{7}{3} \quad \checkmark$ $x = 1 \quad \checkmark$	٧
$\text{الف) } 2x^2 - 5x + 3 = 0$ $\frac{1}{a} < \frac{c}{b} = \frac{3}{5} \quad \checkmark$	$\text{ج) } 2x^2 - 5x + 1$ $-b \pm \sqrt{b^2 - 4ac}$ $\frac{5 \pm \sqrt{25 - 8}}{4}$ $x = \begin{cases} \frac{5 + \sqrt{17}}{4} \quad \checkmark \\ \frac{5 - \sqrt{17}}{4} \quad \checkmark \end{cases}$	١
$\text{ب) } 2x^2 + 5x + 3$ $a+c < b \Rightarrow \frac{-c}{a} = \frac{-3}{2} \quad \checkmark$	$\text{د) } 9x^2 + 7x + 9 = 0$ $\Delta = b^2 - 4ac$ $49 - 162 < 0$ $\Rightarrow \text{جواب ندارد} \quad \checkmark$	٢
$x^2 - 3x - 2 = 0$ $\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{3 \pm \sqrt{17}}{2}$ $S = \frac{3 + \sqrt{17}}{2} + \frac{3 - \sqrt{17}}{2} = 3 \quad \checkmark$ $P = \frac{3 + \sqrt{17}}{2} \times \frac{3 - \sqrt{17}}{2} = \frac{9 - 17}{4} = -2 \quad \checkmark$	$S - 2P = 9 - 2(-2) = 13 \quad \checkmark$ $S - 3P = 3 - 3(-2) = 9 \quad \checkmark$ $S = \frac{-b}{a} \quad \checkmark$ $P = \frac{c}{a} \quad \checkmark$	٩
$\begin{pmatrix} 9 \\ 7 \end{pmatrix} + \begin{pmatrix} 7 \\ 5 \end{pmatrix} =$ $\frac{9!}{7!(2!)} = \frac{9 \times 8}{2} = 36 \quad \checkmark$ $\frac{7!}{5!(2!)} = \frac{7 \times 6}{2} = 21 \quad \checkmark$	$\begin{pmatrix} 9 \\ 7 \end{pmatrix} - \begin{pmatrix} 7 \\ 5 \end{pmatrix} =$ $\frac{9!}{7!(2!)} = \frac{9 \times 8 \times 7}{2 \times 7} = 18 \quad \checkmark$ $\frac{7!}{5!(2!)} = \frac{7 \times 6}{2} = 21 \quad \checkmark$ $18 - 21 = -3 \quad \checkmark$	١٠