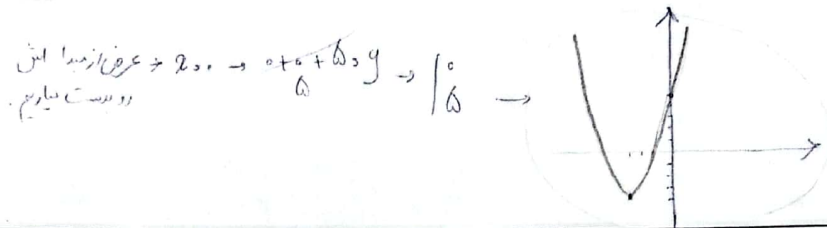
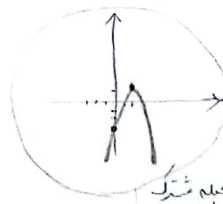


الف) $y = x^2 + 4x + 5 \rightarrow \text{ext} \left| \frac{-b}{2a} \right| \rightarrow \frac{-b}{2a} = \frac{-4}{2} = -2 \rightarrow (-2)^2 + 4(-2) + 5 = 4 - 8 + 5 = 1$
 نوع: $a > 0 \rightarrow \text{Min}$



الف) $y = -x^2 + 4x - 3 \rightarrow \text{ext} \left| \frac{-b}{2a} \right| \rightarrow \frac{-b}{2a} = \frac{-4}{-2} = 2 \rightarrow -(2)^2 + 4(2) - 3 = -4 + 8 - 3 = 1$
 نوع: $a < 0 \rightarrow \text{Max}$



الف) $\Delta > 0 \rightarrow \Delta = b^2 - 4ac = (-3)^2 - 4(1)(-1) = 9 + 4 = 13 > 0 \rightarrow 9 > 4a \rightarrow a < \frac{9}{4}$ ω

ب) $\Delta = 0 \rightarrow \Delta = b^2 - 4ac = (-3)^2 - 4a = 9 - 4a = 0 \rightarrow 4a = 9 \rightarrow a = \frac{9}{4}$ ω

ج) $\Delta < 0 \rightarrow \Delta = b^2 - 4ac = 9 - 4a < 0 \rightarrow 9 < 4a \rightarrow a > \frac{9}{4}$ ω

د) $\Delta > 0$ و $\Delta = 0 \Rightarrow \Delta > 0 \rightarrow \Delta = b^2 - 4ac = 9 - 4a > 0 \rightarrow 9 > 4a \rightarrow a < \frac{9}{4}$ ω

الف) $x^2 - 2x - 1 = 0 \xrightarrow{+1} x^2 - 2x + 1 = 2 \rightarrow (x-1)^2 = 2 \rightarrow x-1 = \sqrt{2} \rightarrow x = 1 + \sqrt{2}$
 $x-1 = -\sqrt{2} \rightarrow x = 1 - \sqrt{2}$

ب) $x^2 - x - 1 = 0$

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

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

الف) $x^2 - 11x + 11 = (x-4)(x-7) = 0$
 اجتماع $x-4=0 \rightarrow x=4$
 افتراض $x-7=0 \rightarrow x=7$

ب) $x^2 + 3x - 21 = (x+7)(x-3) = 0$
 اجتماع $x+7=0 \rightarrow x=-7$
 افتراض $x-3=0 \rightarrow x=3$

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الف) $5x^2 - 11x + \frac{1}{5} = 0 \rightarrow x^2 - 11x + 36 = 0 \rightarrow (x-4)(x-9) = 0$
 اجتماع $x-4=0 \rightarrow x=4$
 افتراض $x-9=0 \rightarrow x=9$

ب) $3x^2 - 10x + \frac{1}{3} = 0 \rightarrow x^2 - 10x + 21 = 0 \rightarrow (x-3)(x-7) = 0$
 اجتماع $x-3=0 \rightarrow x=3$
 افتراض $x-7=0 \rightarrow x=7$

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الف) $2x^2 - 5x + 3 = 0 \rightarrow a+b+c=0 \rightarrow \begin{cases} x=1 \\ x=\frac{c}{a} = \frac{3}{2} \end{cases}$

ب) $2x^2 + 5x + 3 = 0 \rightarrow a+c=b \rightarrow \begin{cases} x=-1 \\ x=\frac{-c}{a} = -\frac{3}{2} \end{cases}$

ج) $2x^2 - 5x + 1 = 0 \rightarrow \Delta = b^2 - 4ac = 25 - 4(2)(1) = 17 \rightarrow \Delta > 0 \rightarrow \begin{cases} x = \frac{-b+\sqrt{\Delta}}{2a} = \frac{5+\sqrt{17}}{4} \\ x = \frac{-b-\sqrt{\Delta}}{2a} = \frac{5-\sqrt{17}}{4} \end{cases}$

د) $4x^2 + 7x + 9 = 0 \rightarrow \Delta = b^2 - 4ac = 49 - 4(4)(9) = -95 \rightarrow \Delta < 0 \rightarrow \begin{cases} \text{لا توجد حلول حقيقية} \end{cases}$

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$x^2 - 3x - 2 = 0 \rightarrow S = \frac{-b}{a} = \frac{-(-3)}{1} = 3$, $P = \frac{c}{a} = \frac{-2}{1} = -2$

الف) $S^2 - 2P = 3^2 - 2(-2) = 9 + 4 = 13$

ب) $S^3 - 3SP = 3^3 - 3(3)(-2) = 27 + 18 = 45$

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الف) $\binom{7}{5} + \binom{9}{2} = \binom{7}{2} + \binom{9}{5} = \frac{7 \times 6}{2 \times 1} + \frac{9 \times 8 \times 7}{3 \times 2 \times 1} = 21 + 84 = 105$

ب) $\binom{9}{3} - \binom{11}{2} = \frac{9 \times 8 \times 7}{3 \times 2 \times 1} - \frac{11 \times 10}{2 \times 1} = \frac{9 \times 8 \times 7}{3 \times 2 \times 1} - \frac{11 \times 10}{2 \times 1} = 84 - 55 = 29$

$84 - 55 = 29$

اذا كان n زوجاً، فإن عدد طرقي n فالتوزيع n بالي
 في توسيع $(x+y)^n$ يساوي عدد فالتوزيع n في $(x+y)^n$

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