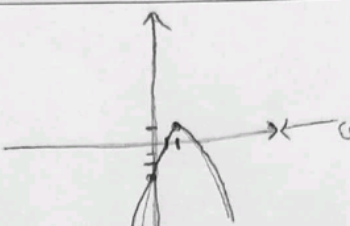


شکلی $y = x^2 + 4x + a$
 الف) مختصات $\left(-\frac{b}{2a}, -\frac{\Delta}{4a}\right) \leftarrow \text{نقطه}$
 $\min$
 $y = x^2 + 4x + a \xrightarrow{a > 0} \min \begin{cases} -\frac{b}{2a} = -\frac{4}{2} = -2 \\ 9 - 16 + a = -4 \end{cases}$
 ب) رسم شکلی $\leftarrow$



شکلی $y = -x^2 + 4x - 4$
 الف) مختصات $\left(-\frac{b}{2a}, -\frac{\Delta}{4a}\right) \leftarrow$ رسم شکلی
 $\max$
 $y = -x^2 + 4x - 4 \xrightarrow{a < 0} \max \begin{cases} -\frac{b}{2a} = -\frac{4}{-2} = 2 \\ -4 + 16 - 4 = 8 \end{cases}$
 ب) شکلی گویا، در نقطه $\Delta = 0$
 $y = 0 \rightarrow -x^2 + 4x - 4 = 0$
 $-(x-1)(x-3) = 0$
 $x = 1, x = 3$



الف) $b^2 - 4ac > 0$
 $9 - 16a > 0$
 $9 > 16a$
 $\frac{9}{16} > a$
 ب) $b^2 - 4ac = 0$
 $9 - 16a = 0$
 $9 = 16a$
 $\frac{9}{16} = a$
 ج) $b^2 - 4ac < 0$
 $9 - 16a < 0$
 $9 < 16a$
 $\frac{9}{16} < a$

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

ب) $x^2 - x - 1 = 0 \xrightarrow{+\frac{1}{4}} x^2 - x + \frac{1}{4} = \frac{5}{4}$
 $(x - \frac{1}{2})^2 = \frac{5}{4} \xrightarrow{\sqrt{\quad}} x - \frac{1}{2} = \pm\sqrt{\frac{5}{4}}$
 $x = \frac{1}{2} \pm \frac{\sqrt{5}}{2} = \frac{1 \pm \sqrt{5}}{2}$

الف) $x^2 - 2x - 1 = 0$ $\Delta = 4 + 4 = 8$
 $x = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$
 ب) $x^2 - x - 1 = 0$ $\Delta = 1 + 4 = 5$
 $x = \frac{1 \pm \sqrt{5}}{2}$

الف) $x^2 - 2x - 1 = 0$ $\Delta = 4 + 4 = 8$
 $x = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$
 ب) $x^2 - x - 1 = 0$ $\Delta = 1 + 4 = 5$
 $x = \frac{1 \pm \sqrt{5}}{2}$

الف) $x^2 - 11x + 28 = 0$

$(x-4)(x-7) = 0$

$x=4$ $x=7$

ب) $x^2 + 15x - 28 = 0$

$(x+17)(x-4) = 0$

$x=-17$ $x=4$

الف) $x^2 - 12x + 11 = 0$

$x^2 - 12x + 11 = 0$

$(x-1)(x-11) = 0$

$x=1$ $x=11$

ب) $x^2 - 10x + 11 = 0$

$x^2 - 10x + 11 = 0$

$(x-1)(x-11) = 0$

$x=1$ $x=11$

الف) $5x^2 - 2x + 1 = 0$

$x=1$ $x=\frac{1}{5}$

$a+b+c=0 \Rightarrow x = \frac{1}{\frac{c}{a}}$

ب) $5x^2 + 2x + 1 = 0$

$x=-1$ $x=-\frac{1}{5}$

$a+c=b \Rightarrow x = -\frac{c}{a}$

ج) $5x^2 - 2x + 1 = 0$

$\Delta = 4 - 20 = -16$

$x = \frac{2 \pm \sqrt{-16}}{10}$

د) $5x^2 + 17x + 9 = 0$

$\Delta = 289 - 180 = 109$

$x = \frac{-17 \pm \sqrt{109}}{10}$

الف) $S^2 - 2P = 1^2 - 2(-2) = 9 + 4 = 13$

$x^2 - 2x - 2 = 0$

$S = -\frac{b}{a} = 2$

$P = \frac{c}{a} = -2$

ب) $S^2 - 4SP = 1^2 - 4(2)(-2) = 9 + 16 = 25$

الف) $\begin{pmatrix} 1 \\ 2 \end{pmatrix} + \begin{pmatrix} 9 \\ 1 \end{pmatrix} = \begin{pmatrix} 10 \\ 3 \end{pmatrix}$

$\frac{v_1}{a_1 \times v_1} = \frac{v_2 \times 9}{x} = 10 \quad \frac{9 \times 1}{1} = 3$

ب) $\begin{pmatrix} 9 \\ 1 \end{pmatrix} - \begin{pmatrix} 1 \\ 2 \end{pmatrix} = \begin{pmatrix} 8 \\ -1 \end{pmatrix}$

$\frac{9 \times 1}{1 \times 1} = 8 \quad \frac{1 \times 2}{1} = 2$