

الف) $x^2 - 4x + 1 = 0 \rightarrow x^2 - 4x + 4 = (x-2)^2$
 $(x-2)^2 = 1 \rightarrow x-2 = \pm 1 \rightarrow \begin{cases} x-2=1 & x=3 \\ x-2=-1 & x=1 \end{cases}$

ب) $x^2 + 14x + 49 = 0 \rightarrow x^2 + 14x + 49 = (x+7)^2$
 $(x+7)^2 = 9 \rightarrow x+7 = \pm 9 \rightarrow \begin{cases} x+7=9 & x=2 \\ x+7=-9 & x=-16 \end{cases}$

الف) $x^2 - 5x + 4 = 0 \rightarrow (x-1)(x-4) \rightarrow \begin{cases} x=1 \\ x=4 \end{cases}$

ب) $x^2 - 8x - 15 = 0 \rightarrow (x+3)(x-15) \rightarrow \begin{cases} x=15 \\ x=-3 \end{cases}$

الف) $x^2 - 3x - 4 = 0 \rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow x = \frac{3 \pm \sqrt{9+16}}{2} = \frac{3 \pm \sqrt{25}}{2}$
 $x = \frac{3 + \sqrt{25}}{2} = \frac{3+5}{2} = 4$
 $x = \frac{3 - \sqrt{25}}{2} = \frac{3-5}{2} = -1$

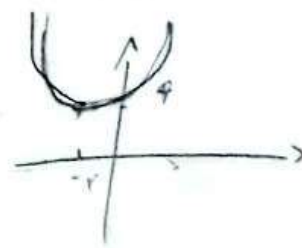
ب) $2x^2 - 5x + \frac{1}{2} = 0$
 $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow \frac{5 \pm \sqrt{25 - 4 \cdot 2 \cdot \frac{1}{2}}}{4} = \frac{5 \pm \sqrt{25-4}}{4} = \frac{5 \pm \sqrt{21}}{4}$
 $x = \frac{5 + \sqrt{21}}{4}$
 $x = \frac{5 - \sqrt{21}}{4}$

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

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

الف) $5x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + 35 = 0 \rightarrow (x-5)(x-7) \rightarrow \begin{cases} x=5 \\ x=7 \end{cases}$

ب) $3x^2 - 10x + 7 = 0 \rightarrow x^2 - 10x + 21 = 0 \rightarrow (x-3)(x-7) \rightarrow \begin{cases} x=3 \\ x=7 \end{cases}$

$y_2^2 - x + y = 0$ $\frac{1 + \sqrt{1-12}}{4}$ $\frac{1 - \sqrt{1-12}}{4}$	$y_2^2 + ax - 1 = 0$ $\frac{-a + \sqrt{a^2 - 12}}{-4}$ $\frac{-a - \sqrt{a^2 - 12}}{-4}$	
$y_2^2 - x + 1 = 0$ $\frac{1 + \sqrt{1-12}}{4}$ $\frac{1 - \sqrt{1-12}}{4}$	$y_2^2 - x + y = 0$ $\frac{4 + \sqrt{16-12}}{4} = 1$ $\frac{4 - \sqrt{16-12}}{4} = 1$	
$\Delta = 0$ $b^2 - 4ac = 0$ $b^2 = 4ac$ $9 = 4 \times 1 \times \left(\frac{1}{\Delta}\right)$	$\Delta > 0$ $[1 - \infty)$ $b^2 - 4ac > 0$ $9 - 4 \times 1 \times a$	
$\Delta \geq 0$ $b^2 - 4ac \geq 0$ $[1 - \infty)$	$\Delta < 0$ $b^2 - 4ac < 0$ $9 < 4 \times 1 \times a$ $(1 + \infty)$	
$\mu_{in} \left \begin{array}{l} \frac{-b}{2a} = \frac{-9}{4} = -\frac{9}{4} \\ \frac{-\Delta}{4a} = \frac{-(b^2 - 4ac)}{4} = \frac{16 - 36}{4} = -5 \end{array} \right.$	$y = x^2 + 9x - 4$ 	
$\mu_{ax} \left \begin{array}{l} \frac{-b}{2a} = \frac{-9}{-4} = \frac{9}{4} \\ \frac{-\Delta}{4a} = \frac{-(16-36)}{-4} = 2.5 \end{array} \right.$	$y = -x^2 + 9x - 4$ 	
$S = \frac{-b}{a} = \frac{9}{1} = 9$ $P = \frac{c}{a} = \frac{-4}{1} = -4$ $S^2 - 4P = 81 + 16 = 97$	$S = \frac{-b}{a} = \frac{9}{1} = 9$ $P = \frac{c}{a} = \frac{-4}{1} = -4$ $S^2 - 4P = 81 + 16 = 97$	