

الف)  $x^2 - 4x + 9 = 1 \quad (x-3)^2 = 1 \quad x-3 = \pm 1 \quad \boxed{x=4 \quad x=2}$

ب)  $x^2 + 8x + 14 = 9 \quad (x+4)^2 = 9 \quad x+4 = \pm 3 \quad \boxed{x=-7 \quad x=-1}$

الف)  $(x-2)(x-3) \rightarrow \boxed{x=3 \quad x=2}$

ب)  $(x-7)(x+2) \rightarrow \boxed{x=7 \quad x=-2}$

الف)  $\frac{3 \pm \sqrt{9 - 4 \times 1 \times 1}}{2} \Rightarrow \boxed{x = \frac{3 + \sqrt{5}}{2} \quad x = \frac{3 - \sqrt{5}}{2}} \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

ب)  $\frac{4 \pm \sqrt{14 - 4 \times \frac{1}{4} \times 2}}{4} \Rightarrow \boxed{x = 1 + \frac{\sqrt{3}}{2} \quad x = 1 - \frac{\sqrt{3}}{2}}$   
 $\left( \frac{4 \pm \sqrt{12}}{4} \right) \rightarrow \frac{4 \pm 2\sqrt{3}}{4} \Rightarrow \frac{2 \pm \sqrt{3}}{2} \Rightarrow \frac{2 \pm \sqrt{3}}{2}$

الف)  $\text{عوامل مشترک} \rightarrow (x-1)(x-2) \rightarrow \boxed{x=2 \quad x=1}$

ب)  $\text{روسی} \rightarrow \cancel{4}x^2 + x - 3 = 0 \quad x^2 + x - 3 = 0 \quad (x-3)(x+4) = 0$   
 $\boxed{x = \frac{-1}{2} = -1 \quad x = \frac{3}{2}}$

الف)  $x^2 - 12x + 36 \Rightarrow \underbrace{(x-6)}_v \underbrace{(x-6)}_v \Rightarrow \boxed{x = \frac{0}{0} = 1 \quad x = \frac{6}{0}}$

ب)  $x^2 - 10x + 21 \Rightarrow \underbrace{(x-7)}_v \underbrace{(x-3)}_3 \Rightarrow \boxed{x = \frac{0}{0} = 1 \quad x = \frac{7}{3}}$

الف)  $a = -3, c = -1 \Rightarrow 25 - 4 \times (-1) = 13 \Delta > 0$   $\Delta = b^2 - 4ac$

ب)  $a = 2, c = 2 \Rightarrow 1 - 14 = -13 \Delta < 0$  0 ریشه واقعی ندارد

ج)  $a = 2, c = 2 \Rightarrow 14 - 14 = 0 \Delta = 0$  1 ریشه واقعی مضاعف

د)  $a = 2, c = 1 \Rightarrow 1 - 4 = -3 \Delta < 0$  0 ریشه واقعی ندارد

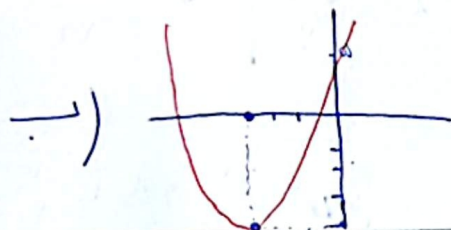
الف)  $b^2 - 4ac \rightarrow 9 - 4 \times 2 \times a = 9 - 8a > 0 \Rightarrow a < \frac{9}{8}$   $a < \frac{9}{8}$   $a = 2, b = -3, c = a$

ب)  $\Delta = 0 \Rightarrow 9 - 8a = 0 \Rightarrow a = \frac{9}{8}$   $a = \frac{9}{8}$

ج)  $\Delta < 0 \Rightarrow 9 - 8a < 0 \Rightarrow a > \frac{9}{8}$   $a > \frac{9}{8}$

د)  $\Delta > 0 \Rightarrow 9 - 8a > 0 \Rightarrow a < \frac{9}{8}$   $a < \frac{9}{8}$

الف)  $x = \frac{-b}{2a} \Rightarrow \frac{-4}{2} = -2 = x \Rightarrow y = 9 - 18 + 5 = -4$   $\min U$   $\begin{bmatrix} -3 \\ -4 \end{bmatrix}$

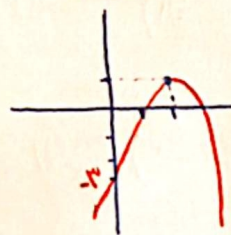


الف)  $x = \frac{-b}{2a} \Rightarrow \frac{-1}{2} = -\frac{1}{2} = x \Rightarrow y = -1 + 1 - 3 = -3$   $\begin{bmatrix} -1 \\ -3 \end{bmatrix}$

ب)  $-x^2 + 6x - 3 = 0 \xrightarrow{\times -1} x^2 - 6x + 3 = 0$

$(x - 3)(x - 1) = 0$   $\begin{bmatrix} 3 \\ 1 \end{bmatrix}$

$x = 3, x = 1$



$x^2 - 3x - 2 = 0 \Rightarrow x = \frac{3 \pm \sqrt{17}}{2}$   $b \pm \sqrt{b^2 - 4ac}$   $\rightarrow 9 + 1 = 10$

$S = \frac{3 + \sqrt{17}}{2} + \frac{3 - \sqrt{17}}{2} = \frac{6}{2} = 3$   $P = \frac{3 + \sqrt{17}}{2} \times \frac{3 - \sqrt{17}}{2} = \frac{9 - 17}{4} = -2 = P$

الف)  $9 - 2(-2) = 13$   $13$

ب)  $27 - 3(3)(-2) = 45$   $45$