

الف: $x^2 - 6x + 1 = 0 \rightarrow x^2 - 6x + 9 = 1 \Rightarrow (x-3)^2 = 1 \Rightarrow x-3 = \pm 1$
 $\Rightarrow x = 4$ و $x = 2$

ب: $x^2 + 11x + 1 = 0 \rightarrow x^2 + 11x + 14 = 9 \Rightarrow (x+7)^2 = 9 \Rightarrow x+7 = \pm 3$
 $\Rightarrow x = -4$ و $x = -10$

الف: $x^2 - 5x + 4 = 0 = (x-1)(x-4) \Rightarrow x = 1$ و $x = 4$

ب: $x^2 - 5x - 14 = 0 = (x-7)(x+2) \Rightarrow x = 7$ و $x = -2$

الف: $x^2 - 3x - 5 = 0 \Rightarrow \Delta = 9 + 20 = 29$
 $x = \frac{3 \pm \sqrt{29}}{2}$

ب: $2x^2 - 4x + \frac{1}{2} = 0 \Rightarrow \Delta = 4 - 2 = 2$
 $x = \frac{4 \pm \sqrt{2}}{4} = 1 \pm \frac{\sqrt{2}}{2}$
 $x = \frac{4 - \sqrt{2}}{4} = 1 - \frac{\sqrt{2}}{2}$

الف: $x^2 - 3x + 2 = 0 = (x-1)(x-2) \Rightarrow x = 1$ و $x = 2$

ب: $4x^2 + x - 3 = 0 \Rightarrow \Delta = 1 + 48 = 49$
 $x = \frac{-1 \pm 7}{8} \Rightarrow x = 1$ و $x = -\frac{3}{4}$

الف: $0x^2 - 12x + 1 = 0 \xrightarrow{\text{ضرب ۳}} x^2 - 12x + 36 = (x-6)^2 = 0$

ب: $3x^2 - 10x + 1 = 0 \xrightarrow{\text{ضرب ۳}} x^2 - 10x + 3 = 0$
 $= (x-3)(x-1) \Rightarrow x = 3$ و $x = 1$
 $\Rightarrow x = \frac{3}{3} = 1$ و $x = \frac{1}{3}$
 همچنین: $x = \frac{1}{3}$ و $x = \frac{3}{1} = 3$

الف: $\Delta = b^2 - 4ac$ $-3x^2 + 6x - 1 = 0 \Rightarrow \Delta = 36 - 12 = 24 \Rightarrow \Delta > 0$ (دو ریشه دارد) (۲)

ب: $2x^2 - x + 2 = 0 \Rightarrow \Delta = 1 - 16 = -15 \Rightarrow \Delta < 0 \Rightarrow$ (ریشه ندارد) (۰)

ج: $2x^2 - 4x + 2 = 0 \Rightarrow \Delta = 16 - 16 = 0 \Rightarrow \Delta = 0 \Rightarrow$ (یک ریشه دارد) (۱)

د: $2x^2 - x + 1 = 0 \Rightarrow \Delta = 1 - 8 = -7 \Rightarrow \Delta < 0 \Rightarrow$ (ریشه ندارد) (۰)

الف: $\Delta > 0 \Rightarrow 9 - 16a > 0 \Rightarrow a < \frac{9}{16}$

ب: $\Delta = 0 \Rightarrow 9 - 16a = 0 \Rightarrow a = \frac{9}{16}$

ج: $\Delta < 0 \Rightarrow 9 - 16a < 0 \Rightarrow a > \frac{9}{16}$

د: $\Delta \geq 0 \Rightarrow 9 - 16a \geq 0 \Rightarrow a \leq \frac{9}{16}$

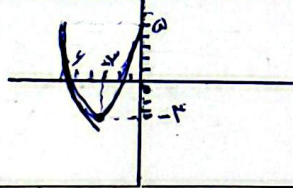
الف: $a > 0 \Rightarrow \min$

$y = x^2 + 4x + 6 \Rightarrow \Delta = 16 - 24 = -8$

$x_s = -\frac{b}{2a} = -\frac{4}{2} = -2$

$y_s = -\frac{\Delta}{4a} = -\frac{-8}{4} = 2$

$(-2, 2)$



الف: $a < 0 \Rightarrow \max$

$y = -x^2 + 2x - 3$

$x_s = -\frac{b}{2a} = -\frac{2}{-2} = 1$

$y_s = -\frac{\Delta}{4a} = -\frac{16}{-4} = 4$

$\Delta = 4 - 12 = -8$

$(1, 4)$

$\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-2 \pm \sqrt{4}}{-2} = \frac{-2 \pm 2}{-2}$

$\Rightarrow \alpha = 1, \beta = 3$



الف: $S^2 - 2P = 16 - 12 = 4$

ب: $S^3 - 3SP = 16 - 3 \times 2 \times 4 = -8$

$x^2 - 3x - 2 = 0$

$a = 1$

$b = -3$

$c = -2$

$S = -\frac{b}{a} = 3$

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