

الف) $x^2 - 6x + 1 = 0 \rightarrow x^2 - 6x + 9 = 1 \rightarrow (x-3)^2 = 1 \rightarrow x-3 = \pm 1 \Rightarrow \begin{cases} x=4 \\ x=2 \end{cases}$

ب) $x^2 + 11x + 14 = 0 \rightarrow x^2 + 11x + 14 = 0 \rightarrow (x+4)^2 = 9 \rightarrow x+4 = \pm 3 \Rightarrow \begin{cases} x=5 \\ x=-13 \end{cases}$

الف) $x^2 - 5x + 6 = 0 \rightarrow (x-2)(x-3) \rightarrow \begin{cases} x=2 \\ x=3 \end{cases}$

ب) $x^2 - 5x - 14 = 0 \rightarrow (x+2)(x-7) \rightarrow \begin{cases} x=-2 \\ x=7 \end{cases}$

الف) $ax^2 + bx + c = 0$
 $x^2 - 3x - 5 = 0 \rightarrow \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-5)}}{2} = \frac{3 \pm \sqrt{29}}{2} = x$

ب) $ax^2 + bx + c = 0$
 $2x^2 - 4x + \frac{1}{2} = 0 \rightarrow \frac{-(-4) \pm \sqrt{(-4)^2 - 4(2)(\frac{1}{2})}}{4} = \frac{4 \pm \sqrt{12}}{4} = x$

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

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

الف) $5x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + 35 \rightarrow (x-7)(x-5)$
 $\rightarrow \begin{cases} x = \frac{7}{5} \rightarrow \frac{7}{5} \\ x = \frac{5}{5} \rightarrow 1 \end{cases}$

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

الف) $-2x^2 + 5x - 1 = 0$

$$-5 \pm \sqrt{(-5)^2 - 4(-2)(-1)} = \frac{-5 \pm \sqrt{13}}{-4} = x$$

ب) $2x^2 - x + 2 = 0$

$$\frac{+1 \pm \sqrt{1 - 4(2)(2)}}{4} = \frac{+1 \pm \sqrt{-15}}{4} \rightarrow \text{فاقد ریشه حقیقی}$$

ج) $2x^2 - 4x + 2 = 0$

$$\frac{4 \pm \sqrt{16 - 4(2)(2)}}{4} \rightarrow \Delta = 0 \text{ فاقد ریشه حقیقی}$$

د) $2x^2 - x + 1 = 0$

$$\frac{1 \pm \sqrt{1 - 4(2)(1)}}{4} = \frac{1 \pm \sqrt{-7}}{4} = \text{فاقد ریشه حقیقی}$$

$\Delta = b^2 - 4ac$ $2x^2 - 7x + a = 0$ $\Delta = (-7)^2 - 4(2)(a) = 49 - 8a$

$49 - 8a > 0 \wedge a < 49/8$ $a < \frac{49}{8}$

$49 - 8a = 0 \wedge a = 49/8$ $a = \frac{49}{8}$

$49 - 8a < 0$ $49 < 8a$ $a > \frac{49}{8}$

$49 - 8a \geq 0$ $49 \geq 8a$ $a \leq \frac{49}{8}$

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

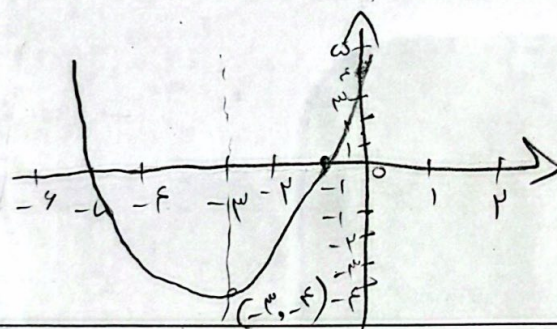
$y = 9 - \frac{1}{9}x + 5 = -4$

الف) منقلبات رأس

$y = x^2 + 9x + 5 = (x+1)(x+5)$

$(-1, 0)$ $(-5, 0)$

$x=0 \rightarrow y=5$



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

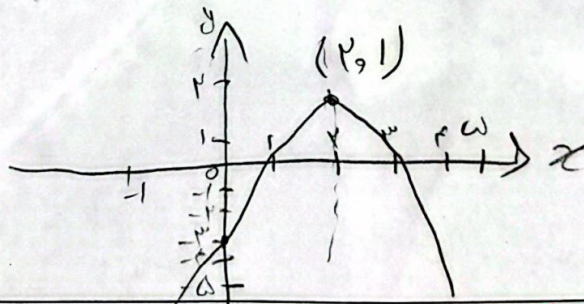
$y = -4 + 1 = -3$

الف)

$-(x^2 - 4x + 3) = 0$

$(x-3)(x-1)$

$(1, 0)$ $(3, 0)$



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

$-3 + 2 = -1 = 5$ $-3 \times 2 = -6 = 4$

الف) $5^2 - 2P = (-1)^2 - 2(-6) = 13$

ب) $5^3 - 3SP = (-1)^3 - 3(-1)(-6) = -19$