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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) $x^2 + 11x + 1 = 0 \rightarrow x^2 + 11x + 12 = 0 \rightarrow (x+4)(x+3) = 0 \Rightarrow \begin{cases} x = -4 \\ x = -3 \end{cases}$

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) $ax^2 + bx + c = 0$
 $x^2 - 3x - 4 = 0 \rightarrow \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-4)}}{2} = \frac{3 \pm \sqrt{25}}{2} = x$

ب) $2x^2 - 4x + \frac{1}{2} = 0 \rightarrow \frac{-(-4) \pm \sqrt{(-4)^2 - 4(2)(\frac{1}{2})}}{4} = \frac{4 \pm \sqrt{12}}{4} = x$
 $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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

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

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

الف) $-2x^2 + 5x - 1 = 0$ دوریه طرد

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

ب) $2x^2 - x + 2 = 0$ (15)

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

ج) $2x^2 - 4x + 2 = 0$

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

د) $2x^2 - x + 1 = 0$ فاقد ریشه حقیقی

$$\frac{1 \pm \sqrt{1 - 4(2)(1)}}{4} = \frac{1 \pm \sqrt{-7}}{4}$$

الف) $\Delta = b^2 - 4ac$ $2x^2 - 4x + a = 0$ $\Delta = (-4)^2 - 4(2)(a) = 16 - 8a$

$16 - 8a > 0 \Rightarrow 16 > 8a \Rightarrow a < 2$

$16 - 8a = 0 \Rightarrow 16 = 8a \Rightarrow a = 2$

$16 - 8a < 0 \Rightarrow 16 < 8a \Rightarrow a > 2$

$16 - 8a \geq 0 \Rightarrow 16 \geq 8a \Rightarrow a \leq 2$

صورت سوال استباه نبودی

(1)

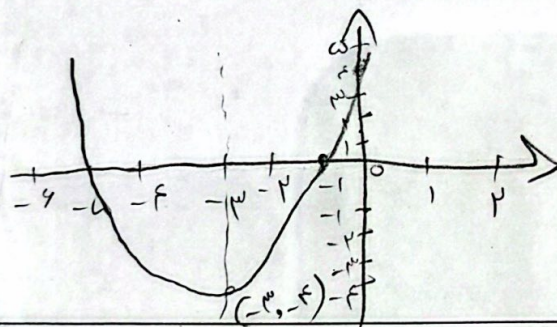
الف) منقلبات رأس $x = \frac{-b}{2a} = \frac{-4}{2} = -2$ $y = 9 - 4x + 5 = -4$

$y = x^2 + 4x + 5 = (x+2)(x+5)$

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

$x=0 \rightarrow y=5$

(15) ✓

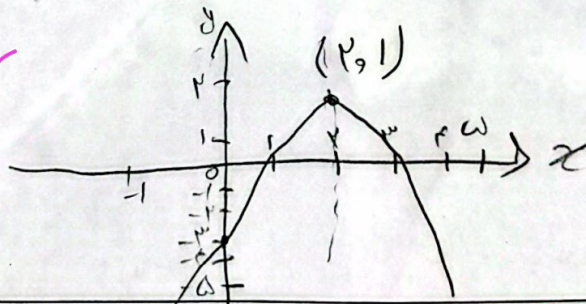


الف) $x = \frac{-b}{2a} = \frac{-4}{2} = -2$ $y = -4 + 16 - 11 = 1$

$-(x^2 - 4x + 3) = 0$ (15) ✓

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

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



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

$-3 + 2 = -1 = S$ $-3 \times 2 = -6 = P$

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

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

الف) $S^2 - 2P = (-1)^2 - 2(-6) = 13$ $(-1)^2 - 2(-6) = 13$

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