

الف) $x^2 - 4x + 4 = 0 \Rightarrow x^2 - 4x + 4 = 1 \Rightarrow (x-2)^2 = 1 \Rightarrow \boxed{x=4} \text{ و } \boxed{x=0}$

ب) $x^2 + 8x + 16 = 0 \Rightarrow x^2 + 8x + 16 = 9 \Rightarrow (x+4)^2 = 9 \Rightarrow \boxed{x=-1} \text{ و } \boxed{x=-7}$

ممنوعه است تا با خود
ممنوعه است ۳.

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الف) $x^2 - 5x + 6 = 0 \Rightarrow (x-2)(x-3) = 0 \Rightarrow \boxed{x=2, 3}$

$a+b=-5 \Rightarrow a=-2$
 $a \times b = 6 \Rightarrow b = -3$

ب) $x^2 - 5x - 14 = 0 \Rightarrow (x-7)(x+2) = 0 \Rightarrow \boxed{x=7, -2}$

$a+b=5 \Rightarrow a=-7$
 $a \times b = -14 \Rightarrow b = 2$

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الف) $x^2 - 3x - 5 = 0 \Rightarrow \frac{-(-3) \pm \sqrt{9 - 4(-5)}}{2} \Rightarrow \boxed{x = \frac{3 + \sqrt{29}}{2}, \frac{3 - \sqrt{29}}{2}}$

ب) $2x^2 - 4x + \frac{1}{2} = 0 \Rightarrow \frac{-(-4) \pm \sqrt{16 - 4(2)(\frac{1}{2})}}{2 \times 2} \Rightarrow \boxed{x = 1 + \frac{\sqrt{12}}{2}, 1 - \frac{\sqrt{12}}{2}}$

فرمول دلتا: $\Delta = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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الف) $x^2 - 3x + 2 = 0 \Rightarrow a+b+c=0 \Rightarrow x=1, \frac{c}{a} \Rightarrow \boxed{x=1, 2}$
 $1+(-3)+2=0$

ب) $4x^2 + x - 3 = 0 \Rightarrow a+c=b \Rightarrow x=-1, -\frac{c}{a} \Rightarrow \boxed{x=-1, \frac{3}{4}}$
 $4+(-3)=1$

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الف) $5x^2 - 12x + 7 = 0 \Rightarrow x^2 - 12x + 35 = 0 \Rightarrow (x-7)(x-5) = 0 \Rightarrow \boxed{x = \frac{7}{5}, 1}$

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

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$$2a^2 - 4a - 1 = 0 \quad \text{الف)}$$

$$\Delta = 16 - 4(-4)(-1) = 0 \Rightarrow \Delta = 16 - 16 = 0 \Rightarrow \Delta = 0 \Rightarrow \Delta > 0 \Rightarrow \Delta = 13 \Rightarrow \Delta > 0 \Rightarrow \Delta > 0$$

دو ریشه حقیقی

$$\text{ب)} \quad 2a^2 - 4a + 2 = 0$$

$$\Delta = (-4)^2 - 4(2)(2) = 0 \Rightarrow \Delta = 0 \Rightarrow \Delta < 0 \Rightarrow \Delta < 0 \Rightarrow \Delta < 0$$

دو ریشه حقیقی دارم

دو ریشه حقیقی

$$\text{پ)} \quad 2a^2 - 4a + 2 = 0$$

$$\Delta = (-4)^2 - 4(2)(2) = 0 \Rightarrow \Delta = 0 \Rightarrow \Delta = 0 \Rightarrow \Delta = 0 \Rightarrow \Delta = 0$$

یک ریشه حقیقی

$$\text{ت)} \quad 2a^2 - 4a + 1 = 0 \Rightarrow \Delta = 16 - 8 = 8 \Rightarrow \Delta > 0 \Rightarrow \Delta > 0 \Rightarrow \Delta > 0$$

دو ریشه حقیقی

$$\text{الف)} \quad 4 - 8a > 0 \Rightarrow a < \frac{1}{2}$$

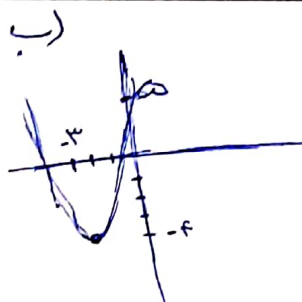
$$\text{ب)} \quad 4 - 8a = 0 \Rightarrow a = \frac{1}{2}$$

$$\text{ج)} \quad 4 - 8a < 0 \Rightarrow a > \frac{1}{2}$$

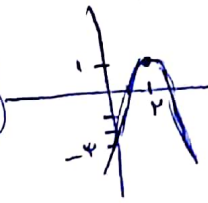
$$\text{د)} \quad 4 - 8a \geq 0 \Rightarrow a \leq \frac{1}{2}$$

$$\Delta \geq 0$$

$$\text{الف)} \quad \begin{aligned} \text{Min} \quad & \left| \begin{array}{c} -\frac{b}{2a} \\ -\frac{\Delta}{4a} \end{array} \right| = \begin{array}{c} -3 \\ -4 \end{array} \end{aligned}$$



$$\text{الف)} \quad \begin{aligned} \text{Max} \quad & \left| \begin{array}{c} -\frac{b}{2a} \\ -\frac{\Delta}{4a} \end{array} \right| = \begin{array}{c} 2 \\ 1 \end{array} \end{aligned}$$



$$\text{ب)} \quad y = 0$$

$$-a^2 + 4a - 3 = 0$$

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

$$-(a-1)(a-3) = 0$$

$$\Rightarrow a = 1, 3$$

در نقاط 1 و 3

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

$$\text{الف)} \quad S^2 - 2P = 3^2 - 2(-2) = 9 + 4 = 13$$

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

$$\text{ب)} \quad S^3 - 3(S)(P) = 3^3 - 3(3)(-2) = 27 + 18 = 45$$

$$\Rightarrow S = 3$$

$$P = -2$$