

الف) $x^2 - 4x + 8 = 0 \Rightarrow x^2 - 4x + 9 = 1 \Rightarrow (x-2)^2 = 1 \Rightarrow \begin{cases} x-2 = 1 \Rightarrow x = 3 \\ x-2 = -1 \Rightarrow x = 1 \end{cases}$

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ب) $x^2 + 8x + 17 = 0 \Rightarrow x^2 + 8x + 14 = -2 \Rightarrow (x+4)^2 = 2 \Rightarrow \begin{cases} x+4 = \sqrt{2} \Rightarrow x = -4 + \sqrt{2} \\ x+4 = -\sqrt{2} \Rightarrow x = -4 - \sqrt{2} \end{cases}$

الف) $x^2 - 4x + 4 = 0 \Rightarrow (x-2)(x-2) = 0 \Rightarrow \begin{cases} x = 2 \\ x = 2 \end{cases}$

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ب) $x^2 - 4x - 14 = 0 \Rightarrow (x-4)(x+2) = -10 \Rightarrow \begin{cases} x = 4 \\ x = -2 \end{cases}$

الف) $x^2 - 3x - 4 = 0 \Rightarrow \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{3 \pm \sqrt{9 + 16}}{2} = \frac{3 \pm 5}{2}$
 $1) \frac{3 + 5}{2} = 4$
 $2) \frac{3 - 5}{2} = -1$

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ب) $2x^2 - 3x + \frac{1}{2} = 0 \Rightarrow \frac{2x^2 - 3x + \frac{1}{2}}{2} = 0 \Rightarrow \frac{2x^2 - 3x + \frac{1}{2}}{2} = 0$
 $1) \frac{2x^2 - 3x + \frac{1}{2}}{2} = 0 \Rightarrow \frac{2x^2 - 3x + \frac{1}{2}}{2} = 0$
 $2) \frac{2x^2 - 3x + \frac{1}{2}}{2} = 0 \Rightarrow \frac{2x^2 - 3x + \frac{1}{2}}{2} = 0$

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

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ب) $2x^2 + x - 3 = 0 \Rightarrow \frac{-1 \pm \sqrt{1 + 24}}{4} = \frac{-1 \pm 5}{4} = \frac{4}{4} = 1$
 $1) \frac{-1 + 5}{4} = 1$
 $2) \frac{-1 - 5}{4} = -1$

الف) $4x^2 - 11x + 7 = 0 \Rightarrow x^2 - 11x + 28 = 0 \Rightarrow (x-7)(x-4) = 0 \Rightarrow \begin{cases} x = 7 \\ x = 4 \end{cases}$

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

$$2x^2 - 3x + 5x - 1 = 0$$

$$2x^2 - x + 2 = 0$$

$$2x^2 - 3x - 1 = 2x^2 - 1x = 1x \rightarrow \text{ریشه‌ی مثبتی}$$

توازن

$$1 - 14x + 14 = 14 - 14x = 14 \rightarrow \text{ریشه‌ی مثبتی ندارد.}$$

ب)

$$2x^2 - 4x + 2 = 0$$

ریشه‌ی مضاعف.

$$2x^2 - x + 1 = 0$$

$$1 - 4x + 4 = 14 - 14x = 0 \rightarrow \text{ریشه‌ی مثبتی ندارد.}$$

$$2x^2 - 2x + a = 0$$

$\frac{9}{16}$

$$9 - 4a \geq 0 \Rightarrow a \leq \frac{9}{4}, a \in \mathbb{R}$$

$$1 - 2x + a = 9 - 4a > 0 \Rightarrow a < \frac{1}{4}, a \in \mathbb{R}$$

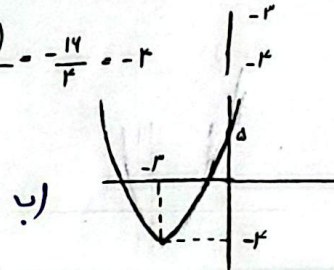
$$9 - 4a = 0 \Rightarrow a = \frac{9}{4}$$

$$9 - 4a > 0 \Rightarrow a > \frac{9}{4}, a \in \mathbb{R}$$

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

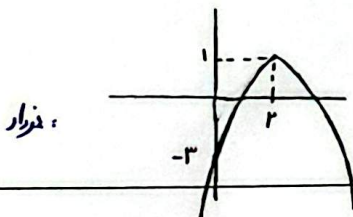
$$\text{نقاط: } x = \frac{-b}{2a} = \frac{-4}{2} = -2, y = \frac{-\Delta}{4a} = \frac{-(16-20)}{4} = \frac{4}{4} = 1$$

از آغای که فریب x^2 است، بی نقطه، نفع نقطه است.



$$y = -x^2 + 4x - 3$$

$$\text{نقاط: } x = \frac{-b}{2a} = \frac{-4}{-2} = 2, y = \frac{-(16-12)}{-4} = 1$$



$$1) \frac{-b - \sqrt{\Delta}}{2a} = \frac{-4 - \sqrt{16-12}}{-2} = \frac{-4 - 2}{-2} = 3$$

$$2) \frac{-b + \sqrt{\Delta}}{2a} = \frac{-4 + \sqrt{16-12}}{-2} = \frac{-4 + 2}{-2} = 1$$

$$x^2 - 3x - 2 = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow 1) \frac{3 + \sqrt{9+8}}{2} = \frac{3 + \sqrt{17}}{2}, \quad 2) \frac{3 - \sqrt{17}}{2}$$

$$5x^2 - 3x = \left(\frac{3 + \sqrt{17}}{2} \right)^2 - 3 \left(\frac{3 + \sqrt{17}}{2} \right) = 9 - (3 + \sqrt{17}) = 6 - \sqrt{17}$$

$$5x^2 - 3x = 5(5x^2 - 3x) = 5x(9+4) = 5x14 = 70$$