

$$x^2 - 4x + 1 = 0$$

$$(x-2)(x-1) \rightarrow \begin{cases} x-2=0 \Rightarrow x=2 \\ x-1=0 \Rightarrow x=1 \end{cases}$$

$$x^2 + 8x + 7 = 0$$

$$(x+1)(x+7) \rightarrow \begin{cases} x+1=0 \Rightarrow x=-1 \\ x+7=0 \Rightarrow x=-7 \end{cases}$$

ⓐ ✓

$$x^2 - 5x + 4 = 0$$

$$(x-2)(x-3) \rightarrow \begin{cases} x-2=0 \Rightarrow x=2 \\ x-3=0 \Rightarrow x=3 \end{cases}$$

$$x^2 - 5x - 14 = 0$$

$$(x+2)(x-7) \rightarrow \begin{cases} x+2=0 \Rightarrow x=-2 \\ x-7=0 \Rightarrow x=7 \end{cases}$$

ⓐ ✓

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

$$\frac{3 \pm \sqrt{9 - 4 \times 1 \times (-5)}}{2} = \frac{3 \pm \sqrt{29}}{2}$$

$$\frac{3 - \sqrt{29}}{2}$$

$$2x^2 - 5x + \frac{1}{2} = 0$$

$$\frac{5 \pm \sqrt{25 - 4 \times 2 \times \frac{1}{2}}}{2 \times 2} = \frac{5 \pm \sqrt{14}}{4}$$

$$\frac{5 - \sqrt{14}}{4}$$

ⓐ ✓

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

$$\text{ب) } \frac{-1 \pm \sqrt{1 - 4 \times \frac{1}{2} \times \frac{1}{2}}}{2 \times \frac{1}{2}} = \frac{-1 \pm \sqrt{1 - 1}}{1} = \frac{-1 \pm 0}{1} = -1$$

ⓐ ✓

$$\text{الف) } x^2 - 11x + 30 = 0$$

$$(x-5)(x-6) \rightarrow \begin{cases} x=5 \\ x=6 \end{cases}$$

$$\text{ب) } x^2 - 10x + 21 = 0$$

$$(x-3)(x-7) \rightarrow \begin{cases} x=3 \\ x=7 \end{cases}$$

ⓐ ✓

$$\text{الف) } \frac{-5 \pm \sqrt{25 - 4 \times 2 \times 1}}{2 \times 2 - 4} = \frac{-5 \pm \sqrt{13}}{-2} \Rightarrow \frac{-5 - \sqrt{13}}{-2} \Rightarrow \frac{5 + \sqrt{13}}{2}$$

$$\text{ب) } \frac{1 \pm \sqrt{1 - 4 \times 2 \times 1}}{2 \times 2 - 4} = \frac{1 \pm \sqrt{-7}}{-2} \Rightarrow \frac{1 \pm i\sqrt{7}}{-2}$$

$$\text{ج) } \frac{4 \pm \sqrt{16 - 4 \times 1 \times 1}}{1 \times 1} = \frac{4 \pm \sqrt{12}}{1} = 4 \pm 2\sqrt{3}$$

$$\text{د) } \frac{1 \pm \sqrt{1 - 4 \times 2 \times 1}}{2 \times 2 - 4} = \frac{1 \pm \sqrt{-7}}{-2} = \frac{1 \pm i\sqrt{7}}{-2}$$

$$\Delta = - \Rightarrow \text{دو جواب منفی است و یکی (دو منفی) است}$$

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$$\text{الف) } \Delta > 0 \Rightarrow 9 - 4a > 0 \Rightarrow a < \frac{9}{4}$$

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

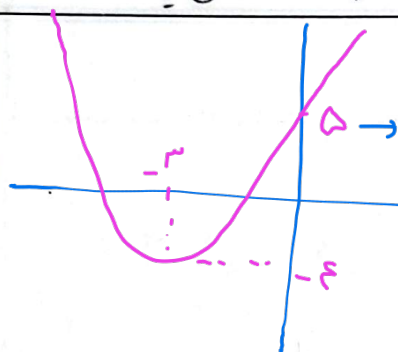
$$\Delta = 9 - 4 \times 2 \times a = 9 - 8a$$

$$\text{ب) } \Delta = 0 \Rightarrow 9 - 8a = 0 \Rightarrow a = \frac{9}{8}$$

$$\text{ج) } \Delta < 0 \Rightarrow 9 - 8a < 0 \Rightarrow a > \frac{9}{8}$$

$$\text{د) } \Delta \geq 0 \Rightarrow 9 - 8a \geq 0 \Rightarrow a \leq \frac{9}{8}$$

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$$\text{ext } \begin{cases} \frac{-b}{2a} = \frac{-4}{2} = -2 \\ \frac{-\Delta}{4a} = \frac{-(9-8a)}{4 \times 1} = \frac{8a-9}{4} \end{cases}$$

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

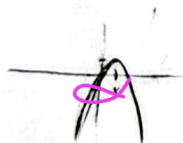
$$(-2, -4) \quad a > 0 \rightarrow \text{min}$$

به معرفی از پیدا
نقطه



(1, 1/8)

(ب)



$$\text{ext } \begin{cases} \frac{-b}{2a} = \frac{4}{-2} = -2 \\ \frac{-\Delta}{4a} = \frac{-(4-12+9)}{4 \times (-1)} = \frac{-1}{-4} = \frac{1}{4} \end{cases}$$

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

$$a < 0 \rightarrow \text{max}$$

$$x = \frac{-b - \sqrt{\Delta}}{2a} = \frac{-4 - \sqrt{16 - 12}}{-2} = \frac{-4 - 2}{-2} = \frac{-6}{-2} = 3$$

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

به معرفی از پیدا
نقطه



$$S = \frac{-b}{a} = 2 \quad P = \frac{c}{a} = -3$$

$$\text{الف) } S^2 - 2P = 2^2 - 2(-3) = 4 + 6 = 10$$

$$\text{ب) } S^2 - 2P = 2^2 - 2(-3) = 4 + 6 = 10$$

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