

$$n^2 - 6n + 1 = 0 \xrightarrow{+1} n^2 - 6n + 9 = 1 \Rightarrow (n-3)^2 = 1 \quad (\text{الف})$$

$$\Rightarrow n-3 = \pm 1 \begin{cases} n=4 \\ n=2 \end{cases}$$

$$n^2 + 14n + 1 = 0 \xrightarrow{+9} n^2 + 14n + 49 = 9 \Rightarrow (n+7)^2 = 9 \Rightarrow n+7 = \pm 3 \Rightarrow n = -4, -10 \quad (\text{ب})$$

$$n^2 - 5n + 4 = 0 \Rightarrow (n-2)(n-3) = 0 \begin{cases} n-2=0 \Rightarrow n=2 \\ n-3=0 \Rightarrow n=3 \end{cases} \quad (\text{الف})$$

$$n^2 - 2n - 15 = 0 \Rightarrow (n-5)(n+3) = 0 \begin{cases} n-5=0 \Rightarrow n=5 \\ n+3=0 \Rightarrow n=-3 \end{cases} \quad (\text{ب})$$

$$n^2 - 3n - 5 = 0 \Rightarrow n = \frac{3 \pm \sqrt{9 - 4(-5)}}{2} = \frac{3 \pm \sqrt{29}}{2} \quad (\text{الف})$$

$$2n^2 - (5n + \frac{1}{2}) = 0 \Rightarrow n = \frac{5 \pm \sqrt{14 - 4}}{4} = \frac{5 \pm \sqrt{10}}{4} \quad (\text{ب})$$

$$n^2 - 3n + 2 = 0 \Rightarrow n = \frac{3 \pm \sqrt{9 - 8}}{2} = \frac{3 \pm 1}{2} \Rightarrow n=2, n=1 \quad (\text{الف})$$

$$4n^2 + n - 3 = 0 \Rightarrow n = \frac{-1 \pm \sqrt{1 + 48}}{8} = \frac{-1 \pm 7}{8} \Rightarrow n = -1, n = \frac{3}{4} \quad (\text{ب})$$

$$2n^2 - 12n + 17 = 0 \Rightarrow n^2 - 6n + 8.5 = 0 \Rightarrow (n-4)(n-2) = 0 \quad (\text{الف})$$

$$n = \frac{4}{2} = 2$$

$$n = \frac{8.5}{2} = 4.25$$

$$3n^2 - 10n + 1 = 0 \Rightarrow n^2 - 10n + 1 = 0 \Rightarrow (n-5)(n-2) = 0 \Rightarrow n=5, n=2 \quad (\text{ب})$$

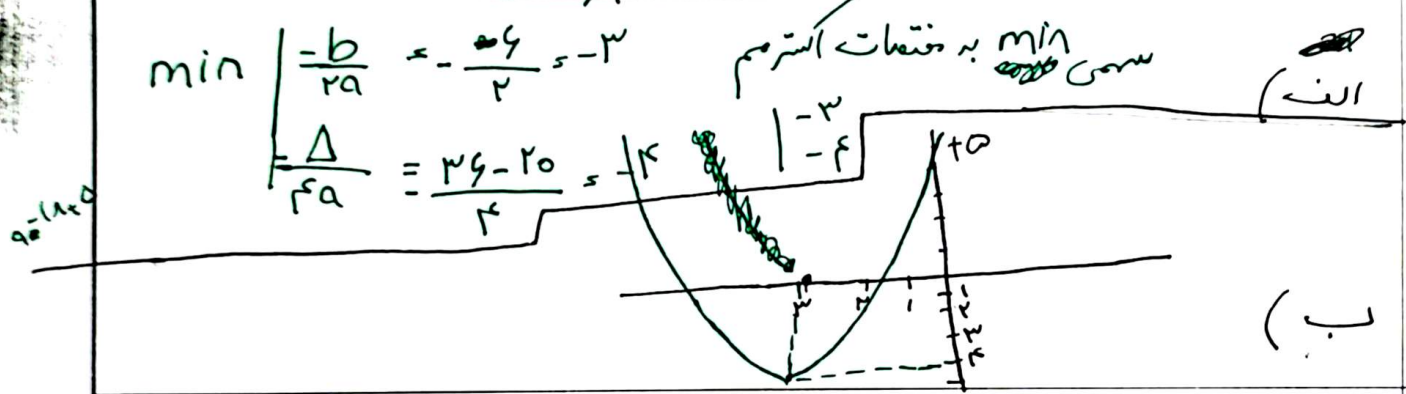
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- الف) دارای ۲ ریشه $\Rightarrow 2x^2 + 5x - 1 = 0 \Rightarrow 25 - 4 = 21 > 0$
- ب) جواب در اعداد صحیح ندارد $\Rightarrow 2x^2 - x + 2 = 0 \Rightarrow \Delta = b^2 - 4ac = 1 - 16 = -15 < 0$
- ج) دارای ۲ ریشه مساوی $\Rightarrow 2x^2 - 4x + 2 = 0 \Rightarrow \Delta = b^2 - 4ac = 16 - 16 = 0$
- ت) جواب در اعداد صحیح ندارد $\Rightarrow 2x^2 - x + 1 = 0 \Rightarrow \Delta = b^2 - 4ac = 1 - 8 = -7 < 0$

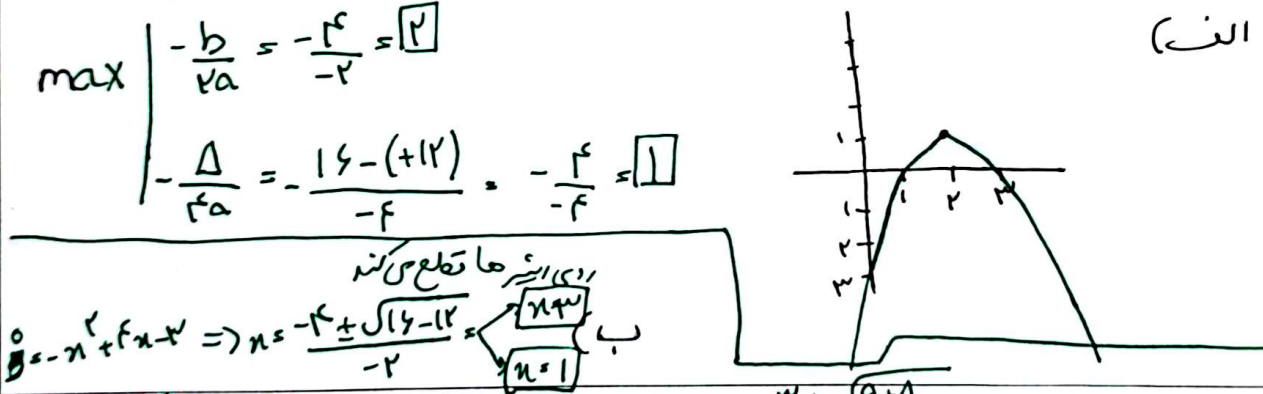
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- الف) برای این کار دلتا باید مثبت باشد $\Delta = 9 - 18a > 0 \Rightarrow a < \frac{1}{2}$
- ب) دلتا برابر ۰ باشد $\Delta = 9 - 18a = 0 \Rightarrow a = \frac{9}{18} = \frac{1}{2}$
- ج) دلتا باید منفی شود $\Delta = 9 - 18a < 0 \Rightarrow a > \frac{1}{2}$
- د) دلتا مثبت باشد $\Delta = 9 - 18a > 0 \Rightarrow a < \frac{9}{18} = \frac{1}{2}$

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الف) $S = \frac{3 + \sqrt{5}}{2} + \frac{3 - \sqrt{5}}{2} = \frac{6}{2} = 3$ $S^2 - 2P = 9 + 4 = 13$

ب) $P = \frac{3 + \sqrt{5}}{2} \times \frac{3 - \sqrt{5}}{2} = \frac{9 - 5}{4} = 1$ $S^3 - 3SP = 27 + 15 = 42$