

یازدهم برر ۱۸، ۷۵

تکلیف ۴

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$$\Rightarrow -\frac{b}{\frac{r}{a}} = 2 \Rightarrow b = -2a \Rightarrow -2(a-1) = 1 \Rightarrow \frac{r}{a} = a \Rightarrow y = -\frac{1}{r}x^2 + x + 2$$

(۲) ۱

$$\Rightarrow n = \frac{-1 \pm \sqrt{1 - 2(\frac{1}{r})(2)}}{-\frac{1}{r}} = \frac{-1 \pm \sqrt{1 - \frac{4}{r}}}{-\frac{1}{r}} = 2 \pm 2 = 4 \text{ و } 0$$

وقت!

$$m < 0 \text{ ① } \Delta > 0 \Rightarrow 2a - 4m^2 > 0 \Rightarrow \frac{2a}{4} > m^2 \Rightarrow -\frac{a}{2} < m < \frac{a}{2} \text{ ②}$$

(۲) ۲

$$\text{① و ②} \Rightarrow m \in (-\frac{a}{2}, 0)$$

$$S = \frac{2 - \sqrt{a} + 2 + \sqrt{a}}{2} = \frac{4}{2} = 2 \quad p = \frac{2 - \sqrt{a}}{2} \times \frac{2 + \sqrt{a}}{2} = \frac{4 - a}{2} = \frac{4}{2} - \frac{a}{2}$$

(۲) ۳

$$n^2 - 5n + p = 0 \Rightarrow n^2 - 5n + \frac{4-a}{2} = 0 \Rightarrow 2n^2 - 10n + 4 - a = 0$$

$$2\alpha^2 + \beta^2 = 2\alpha^2 + 2\beta^2 + \alpha^2 - \beta^2 = 2(\alpha^2 + \beta^2) + (\alpha + \beta)(\alpha - \beta) = 2(5 - 2p) + 2(\sqrt{5 - 2p})$$

$$S = \frac{(-1) \pm \sqrt{1 - 2(1)(2)}}{-1} = 2(1 - 2p) - 2\sqrt{1 - 2p} = 2 - 4p - 2\sqrt{1 - 2p} = 12 \Rightarrow 4p + 2\sqrt{1 - 2p} = 2$$

$$\Rightarrow 2\sqrt{1 - 2p} = 2 - 4p \Rightarrow 1 - 2p = p^2 - 1 \cdot p + 1 \Rightarrow p^2 - 2p + 1 = (p - 1)^2 = 0 \Rightarrow p = 1$$

$$\Rightarrow \frac{m+2}{2} = 1 \Rightarrow m + 2 = 2 \Rightarrow m = 0$$

(۲) ۴

$$y = an^2 + bn + c \xrightarrow{(1,9)} c = 9 \Rightarrow y = an^2 + bn + 9 \quad -\frac{b}{\frac{r}{a}} = 2 \Rightarrow b = -2a$$

(۲) ۵

$$\Rightarrow an^2 - 2an + 9 = y \xrightarrow{(1,9)} 9 = 1a - 2a + 9 = 9 \Rightarrow -a + 9 = 9 \Rightarrow a = 0$$

$$\Rightarrow y = -n^2 + 2n + 9 \xrightarrow{a+c=b} n < \frac{-1}{2} \Rightarrow \text{گراف} \Rightarrow y > 0 \Rightarrow n \in (-1, 3)$$

$$p = \frac{9\beta}{\alpha}$$

(2) 4

$$\alpha\beta^2 - \sqrt{\beta + 9\beta} = \alpha\beta^2 + 2\beta = \frac{\beta}{\alpha} \Rightarrow \alpha\beta + 2 = \frac{\beta}{\alpha} \Rightarrow \alpha\beta = \frac{\beta}{\alpha} - 2 = p$$

$$\Rightarrow \frac{9\beta}{\alpha} = \frac{\beta}{\alpha} - 2 \Rightarrow 9\beta = \beta - 2\alpha \Rightarrow \alpha^2 - \sqrt{\alpha} - 2\alpha = 0 \Rightarrow \alpha^2 - 9\alpha = \alpha(\alpha^2 - 9) = \alpha(\alpha + 3)(\alpha - 3) = 0$$

$$\Rightarrow \alpha = 3 \quad \left(\begin{array}{l} \alpha = 3 \Rightarrow \beta = 4 \Rightarrow \beta = \frac{4}{3} \text{ غلط} \\ \alpha = -3 \Rightarrow \beta = 4 \Rightarrow \beta = \frac{4}{-3} \text{ غلط} \end{array} \right) \Rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{1}{\frac{3}{2}} + \frac{1}{-\frac{1}{2}} = \frac{2}{3} - \frac{1}{2} = \frac{4-3}{6} = \frac{1}{6} \checkmark$$

$$\alpha^2 - m\alpha + 2m = \alpha^2 - m\beta = -m\alpha - m\beta + 2m = -m(\alpha + \beta) + 2m = \Delta$$

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

$$\Rightarrow m = \begin{cases} 2 \Rightarrow n^2 + 2n - 5 = 0 \Rightarrow \Delta < 0 \Rightarrow \text{غلط} \\ -4 \Rightarrow n^2 - 4n + 8 = 0 \Rightarrow \Delta < 0 \Rightarrow \text{غلط} \end{cases}$$

(2) 4

$$\frac{\Delta}{-2a} = \Delta \Rightarrow \Delta = -2a \Rightarrow 14 - 2m(\frac{m}{2} + 1) = -2a \Rightarrow 14 - 2m^2 - 2\Delta m = -2a$$

$$\Rightarrow 2m^2 - 2m - 14 = 0 \Rightarrow m^2 - m - 7 = 0 \Rightarrow (m-2)(m+5) = 0$$

$$\Rightarrow m = \begin{cases} 2 \Rightarrow f(n) = 2m^2 + 2n + \frac{2+1}{2} \Rightarrow \Delta < 0 \Rightarrow \text{غلط} \\ -5 \Rightarrow f(n) = -2m^2 + 2n - 1 + 1 \Rightarrow n = \frac{-2 \pm \sqrt{4 - 4(-2)(-1)}}{-2} = \frac{-2 \pm \sqrt{4}}{-2} = 1 \pm 2 \end{cases}$$

$$\Rightarrow n = \begin{cases} 3 \\ -1 \end{cases} \checkmark$$

(2) 4

$$y = an^2 + bnt + c \xrightarrow{(1,0)} c = 4 \Rightarrow y = an^2 + bnt + 4 \quad \frac{-b}{2a} = 2 \Rightarrow b = -4a \Rightarrow y = an^2 - 4ant + 4$$

$$(2,9) \Rightarrow 9 = 4a - 8a + 4 \Rightarrow -4a = 2 \Rightarrow a = -\frac{1}{2} \Rightarrow y = -\frac{1}{2}n^2 + 2n + 4$$

$$n = \frac{-2 \pm \sqrt{4 - 4(-\frac{1}{2})(4)}}{-1} = \frac{-2 \pm \sqrt{12}}{-1} = 2 \pm \sqrt{3}$$

$$\frac{c}{c-4} = \frac{4}{-2} = -2 \quad \text{خداوند سلطان: } \frac{1}{a} + \frac{1}{b} = \frac{3}{p} = \frac{-1}{2}$$

(1,5) 9

$$f = (4a + 4)2 + 4a^2 + 4a + 4 = 4 - 4a - 4 + 4a^2 + 4a + 4 = 4a^2 - 2a - 1 = 0$$

$$a + b + c = 1 \Rightarrow a = \frac{1}{-4} \Rightarrow \begin{cases} n^2 - 4n + 12 = 0 \Rightarrow (n-4)(n-3) = 0 \Rightarrow n = 3 \\ n^2 - (\frac{4}{2} + 4)n + 2(\frac{1}{4}) + 4(\frac{1}{2}) + 4 = n^2 - \frac{1}{2}n + \frac{14}{2} = 0 \end{cases}$$

$$\Rightarrow \Delta < 0 \Rightarrow \text{غلط}$$

$$\Rightarrow n = 3 \checkmark$$

$$a = -\frac{1}{2} \rightarrow 3n^2 - 4n + 4 = 0 \begin{cases} n = 2 \\ n = \frac{2}{3} \end{cases}$$

(1,5) 1