

۱۸, ۵

نام و نام خانوادگی: آرش کمالی شماره: ۱۹ کلاس: ریاضی

۱	$\alpha, \beta \rightarrow \alpha + \beta = \frac{1}{2}$ $\rightarrow r\beta = \frac{1}{2} \rightarrow \beta = \pm \frac{1}{2} \rightarrow \frac{\alpha}{11} = \frac{1}{2} \rightarrow \alpha = 1 \rightarrow 1 - (-1) = 14$ $\rightarrow \frac{\alpha}{11} = -\frac{1}{2} \rightarrow \alpha = -1$	۵
۲	$\sqrt{\frac{1}{\alpha}} + \sqrt{\frac{1}{\beta}} = 5 \rightarrow \frac{1}{\alpha} + \frac{1}{\beta} + 2\sqrt{\frac{1}{\alpha\beta}} = 25 \rightarrow \frac{\alpha+\beta}{\alpha\beta} + 2\sqrt{\frac{1}{\alpha\beta}} = 25$ $\rightarrow m + \frac{1}{m} + 2 = 25 \rightarrow m + \frac{1}{m} = 23 \rightarrow m^2 - 23m + 1 = 0$ $\Delta = 23^2 - 4 = 529 - 4 = 525$ $P = \frac{1}{24} \rightarrow -2x^2 + 23x + 1 = 0 \rightarrow P = \frac{1}{24}$	۵
۳	$\alpha + \beta = 1 \rightarrow x^2 - 5x + P = 0 \rightarrow x^2 - 5x - 2 = 0 \rightarrow (x-2)(x+1) = 0$ $\alpha = 2, \beta = -1$ $\Rightarrow x_1 = 2 \rightarrow -4 + k + 9 - 2 = 0 \rightarrow k = -2$ $\Rightarrow x_2 = -1 \rightarrow 1 + k - 4 - 2 = 0 \rightarrow k = 5$	۵
۴	$\alpha + \beta = -4, \alpha\beta = 9$ $\rightarrow x^2 + 4x + 9 = 0 \rightarrow \Delta = 16 - 36 = -20$ $\alpha = -2 + \sqrt{5}, \beta = -2 - \sqrt{5}$ $\rightarrow \alpha^2 = 11 - 4\sqrt{5}, \beta^2 = 11 + 4\sqrt{5}$ $\rightarrow \alpha^2 + \beta^2 = 22$	۵
۵	$x^2 + t \rightarrow t^2 - vt - 2 = 0 \rightarrow t = \frac{v \pm \sqrt{v^2 + 8}}{2}$ $\rightarrow x = \frac{v \pm \sqrt{v^2 + 8}}{2}$ $\rightarrow rP^2 - rS/P + r\beta = ? \rightarrow rP^2 = 9 + v\sqrt{49}$	۵
۶	$\alpha, \beta \rightarrow (\alpha - \frac{1}{r}) + (\beta - \frac{1}{r}) / S' = \frac{a}{r^2} = -\frac{1}{r}, P' = -r$ $S' = \alpha + \beta + 1 = -\frac{1}{r} \rightarrow \alpha + \beta = -\frac{1}{r} - 1$ $S = \frac{a}{r} = -\frac{r}{2} \rightarrow a = -\frac{r^2}{2}$ $P = \frac{b}{r} = -r \rightarrow b = -r^2$ $\rightarrow \left[\frac{ab}{r} \right] = -r$	۵
۷	$r \cdot \beta^2 + r \cdot \beta^2 + r \cdot \alpha^2 - r \cdot \beta = \frac{14}{r} \rightarrow r\beta^2 + (1-\beta)^2 - \beta = \frac{14}{r}$ $\rightarrow r\beta^2 - r\beta + 1 - \frac{14}{r} = 0 \rightarrow \beta = \frac{r \pm \sqrt{r^2 - 4(1 - \frac{14}{r})}}{2}$ $ \alpha - \beta = (1-\beta) - \beta = 1 - 2\beta \rightarrow 5 - \frac{r\sqrt{a}}{a} = \frac{r\sqrt{a}}{a}$	۵

$$m, m+r \rightarrow S = r_{m+r} \Rightarrow a = r_{m+1}$$

$$P_{S, m(m+r)} \rightarrow 1 + r_m = m^r + r_m \rightarrow m^r + 1 \rightarrow m \leq 1 \xrightarrow{\text{sub}} m \leq 1$$

$$\rightarrow \omega_{m^r}, 1, r, \dots, P_{S, r}$$

$$r_n, r_{n+r} \rightarrow S = r_n + r_{n+r} = r_{n+1} \xrightarrow{a=r} r_{n+1} \rightarrow r_{n+1} \rightarrow r_{n+1} \rightarrow r_{n+1} \rightarrow P_{S, r}$$

$$r_{n+1} = r_{n+1}$$

$$\alpha + \beta = 1$$

$$\alpha \beta = -(m^r + 1)$$

$$\alpha^r + \beta^r = (-1)^r - r(-1 - m^r) = r + r m^r \xrightarrow{r m^r > 0} \text{min: } m = 0$$

$$\Rightarrow \alpha^r + \beta^r > r$$

$$1.1) (x, y) \quad (-a, y) \rightarrow \frac{-b}{2a} \leq x \leq 1 \leq y \leq 1$$

$$\rightarrow (-1, 1) \rightarrow y \leq x(x+1)^2 + 1 \leq ax^2 + 2ax + a + 1$$

$$\Delta \leq \sqrt{-4a} \rightarrow a \leq \frac{-2a \pm \sqrt{-4a}}{2a} \rightarrow \begin{matrix} -1 - \sqrt{\frac{-1}{a}} \rightarrow S \leq -r \\ -1 + \sqrt{\frac{-1}{a}} \rightarrow P \leq 1 - \frac{1}{a} \end{matrix}$$

$$x^2 + \beta x + \gamma^2 - 2P \leq P - r(1 - \frac{1}{a}) \leq 0$$

$$\rightarrow \frac{-r}{a} \leq x \leq a \leq -\frac{r}{r}$$

$$\rightarrow y \leq -\frac{r}{r} (x+1)^2 + 1 \xrightarrow{\text{no}} y \leq 1/r$$

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