

۱۹, ۵

نام و نام خانوادگی: داستان آفرینی پاسخنامه تشریحی تکلیف شماره ۱۹ کلاس: پازدهم دبیرستان

$$\begin{aligned} 3n^2 - an + f &= 0 & \alpha &= 2\beta \\ \alpha\beta &= \beta \times 2\beta = 2\beta^2 = \frac{f}{3} \rightarrow \beta^2 = \frac{f}{6} \rightarrow \beta = \pm \frac{\sqrt{f}}{\sqrt{6}} \\ \left\{ \begin{aligned} \beta &= \frac{\sqrt{f}}{\sqrt{6}} & \alpha &= \frac{2\sqrt{f}}{\sqrt{6}} \rightarrow \alpha + \beta = \frac{3\sqrt{f}}{\sqrt{6}} = \frac{a}{3} \rightarrow a = 1 \\ \beta &= -\frac{\sqrt{f}}{\sqrt{6}} & \alpha &= -\frac{2\sqrt{f}}{\sqrt{6}} \rightarrow \alpha + \beta = -\frac{3\sqrt{f}}{\sqrt{6}} = -\frac{a}{3} \rightarrow a = -1 \end{aligned} \right. \\ \rightarrow 1 - (-1) &= 19 \checkmark \end{aligned}$$

$$\begin{aligned} 3n^2 - (m+14)n + 1 &= 0 & \sqrt{\frac{1}{\alpha}} + \sqrt{\frac{1}{\beta}} &= \Delta \\ \rightarrow \frac{1}{\alpha} + \frac{1}{\beta} + 2\sqrt{\frac{1}{\alpha\beta}} &= 2\Delta \rightarrow m+14 + 2\sqrt{\frac{1}{\frac{1}{3\Delta^2}}} = 2\Delta \\ \xrightarrow{\text{S/P}} m+14 & \rightarrow m+14 = 12 \rightarrow m = -2 \\ \rightarrow mn^2 + 2m + 2 &= -n^2 + 2n + 2 = 0 \rightarrow p = \frac{2}{-1} = -2 \checkmark \end{aligned}$$

$$\begin{aligned} kn^3 + kn^2 - 9n - 2 &= 0 & \alpha + \beta &= 1 & \alpha\beta &= -2 \\ \rightarrow \alpha &= -\beta + 1 \rightarrow \beta(1-\beta) = -2 \rightarrow \beta^2 - \beta - 2 = 0 \\ \rightarrow (\beta-2)(\beta+1) &= 0 \left\{ \begin{aligned} \beta &= 2 & \alpha &= -1 \checkmark \\ \beta &= -1 & \alpha &= 2 \checkmark \end{aligned} \right. \\ \xrightarrow{\text{جایگزینی}} -f + k + 9 - 2 &= 0 \rightarrow k = -3 \checkmark \end{aligned}$$

$$\begin{aligned} n^2 + 4n + a &= 0 & \alpha < \beta < 0 & & 2\alpha^2 + 2\beta^2 &= 12\sqrt{2} + 18\Delta \\ \rightarrow \alpha + \beta &= -4 \rightarrow \alpha = -4 - \beta \rightarrow 2\alpha^2 + 2\alpha^2 + 12 + 2\alpha = 12\sqrt{2} + 18\Delta \\ \rightarrow \Delta\alpha^2 + 2\alpha - 12\sqrt{2} - 18\Delta &= 0 \rightarrow \alpha = \frac{-2 \pm \sqrt{4 + 4\Delta(12\sqrt{2} + 18\Delta)}}{2\Delta} \\ \rightarrow &= \frac{-2 \pm (4 + 10\sqrt{2})}{2\Delta} \alpha < 0 \rightarrow = \frac{-2 - 4 - 10\sqrt{2}}{2\Delta} = -\frac{3 + 5\sqrt{2}}{\Delta} \\ \rightarrow \beta &= -3 + 5\sqrt{2} \rightarrow \alpha\beta = a = (-\frac{3 + 5\sqrt{2}}{\Delta})(-3 + 5\sqrt{2}) = 9 - 18 = -9 \checkmark \end{aligned}$$

$$\begin{aligned} n^2 - \sqrt{49}n - \Delta &= 0 & \text{S} & \text{P} & 2p^2 - 3sp + 2s &= ? \\ n^2 = t \rightarrow t^2 - \sqrt{49}t - \Delta &= 0 \rightarrow t = \frac{\sqrt{49} \pm \sqrt{49 + 4\Delta}}{2} \rightarrow \text{یک رابطه t مفید دیگری نیست آنگاه می توانیم در رابطه هم شکل و قرینه دارد.} \\ \text{ریشه ها} &= \pm \sqrt{\frac{\sqrt{49} + \sqrt{49 + 4\Delta}}{2}} \rightarrow p = -\frac{\sqrt{49} + \sqrt{49 + 4\Delta}}{2} \\ 2p^2 - 3sp + 2s &= 2p^2 = \frac{1}{4} \times \left(\frac{\sqrt{49} + \sqrt{49 + 4\Delta}}{2} \right)^2 = \frac{49 + \sqrt{49 + 4\Delta}}{4} \end{aligned}$$

$$2p^2 = \frac{2(\sqrt{49} + \sqrt{49 + 4\Delta})^2}{4} = 29 + \sqrt{49 + 4\Delta}$$

$2x^2 - ax + b = 0 \rightarrow \alpha, \beta$ $2ax^2 + ax - 4 = 0 \rightarrow \alpha - \frac{1}{r}, \beta - \frac{1}{r}$ $\alpha + \beta = \frac{a}{r} \quad \alpha + \beta - 1 = -\frac{1}{r} \rightarrow \alpha + \beta = \frac{1}{r} \rightarrow a = 1$ $(\alpha - \frac{1}{r})(\beta - \frac{1}{r}) = \alpha\beta - \frac{1}{r}(\alpha + \beta) + \frac{1}{r^2} = -\frac{1}{r} - \frac{1}{r^2} \cdot \frac{1}{r} = -\frac{1}{r} - \frac{1}{r^3}$ $\rightarrow \alpha\beta = -\frac{1}{r} \rightarrow \frac{b}{r} = -\frac{1}{r} \rightarrow b = -1 \rightarrow \left[\frac{a}{r}\right] = \left[\frac{-1}{r}\right] = -\frac{1}{r} \checkmark$	(2) 6
$ax^2 - ax - b = 0 \quad f_0\beta^2 + r_0\alpha^2 - r_0\beta = 14 \quad S=1 \quad p = -\frac{b}{a}$ $r_0(\alpha^2 + \beta^2) + r_0\beta - r_0\beta = 14 \rightarrow 4 \cdot \frac{b}{a} = -2 \rightarrow \frac{b}{a} = -\frac{1}{r_0}$ $r_0 + f_0\frac{b}{a} \rightarrow a = -r_0b \rightarrow p = -\frac{b}{a} = \frac{1}{r_0}$ $\rightarrow \alpha + \beta = 1 \rightarrow \alpha = 1 - \beta \rightarrow \beta(1 - \beta) = \frac{1}{r_0} \rightarrow r_0\beta^2 - r_0\beta + 1 = 0$ $\rightarrow \beta = \frac{r_0 \pm \sqrt{r_0^2 - 4r_0}}{2r_0} \rightarrow \beta = \frac{1}{r} + \frac{\sqrt{a}}{a}, \alpha = \frac{1}{r} - \frac{\sqrt{a}}{a}$ $\rightarrow \alpha - \beta = \frac{2\sqrt{a}}{a} \checkmark$	(2) 7
$n^2 - (a+1)n + a = 0$ $\rightarrow m + (m+2) = a+1 \rightarrow 2m+1 = a$ $\rightarrow m(m+2) = m^2 + 2m = a$ $\rightarrow m^2 = 1 \xrightarrow{\text{بسیار}} m=1, m+2=3 \rightarrow 1 \times 3 = 3 = a$ $n^2 - (2a+1)n + b = 0 \xrightarrow{a=3} S=10$ $2n+2=10 \rightarrow n=4, n+2=6 \rightarrow 4 \times 6 = 24 = b$ $\rightarrow 24 - 3 = 21 \checkmark$ در عدد فرد متوالی طبیعی	(2) 8
$x^2 + x - 1 - m^2 = 0 \rightarrow \alpha^2 + \beta^2 = S^2 - 2p = 1 - 2p$ $\rightarrow p = -1 - m^2 \rightarrow S^2 - 2p = 1 + 2 + 2m^2$ $\rightarrow \text{if } m=0 \rightarrow \Delta > 0 \checkmark$ $\rightarrow m=0 \xrightarrow{\min} \alpha^2 + \beta^2 = 1 + 2 + 0 = 3 \checkmark$	(2) 9
$A(x, y) \quad B(-x, y) \quad \frac{y-5}{2} > -1$ $\rightarrow (-1, 1)$ $\rightarrow \text{اس خطی} = f \frac{b}{ra} = f1 \rightarrow b=2a \rightarrow ax^2 + 2ax + c = d$ $\rightarrow a - b + c = 1 \rightarrow a - 2a + c = 1 \rightarrow c = 1 + a$ $\rightarrow ax^2 + 2ax + a + 1 = 0 \rightarrow \alpha^2 + \beta^2 = S^2 - 2p = 4 - 2(a+1) = 2 - 2a$ $\rightarrow \frac{a+1}{a} = -\frac{1}{r} \rightarrow a+1 = -\frac{1}{r}a \rightarrow \frac{r}{r}a = -1 \rightarrow a = -\frac{r}{r}$ $\rightarrow \text{عرض از} = a+1 = -\frac{r}{r} + 1 = \frac{1}{r} \checkmark$	(2) 1