

اول جمله اول  
آخر : ۹۷ و ۸۱

$\frac{11+97}{2} = 54$  ✓

$\{1, 2, 3\}, \{4, \dots, 12\}, \{13, \dots, 24\}, \{25, \dots, 36\}, \{37, \dots, 48\}, \{49, \dots, 60\}$   
 $\frac{121+393}{2} = 257$  ✓

$a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8, a_9, a_{10}$   
 $a_0 = 1$   
 $a_1 = -2$   
جمله اول این دنباله  $a_0$  و جمله آخرت  $a_9$  است!  
جواب صفحه آخر...

$a_0 = 14 \rightarrow$   
 $a_9 = 141$   
 $a_n = ax^n + bx + c \rightarrow a_n = -0.2x^n + bx + c$   
 $14 = -0.2 \times 0 + b \times 0 + c \rightarrow b + c = 14$   
 $141 = -0.2 \times 9 + b \times 9 + c \rightarrow 9b + c = 141$   
 $b = 15, c = -1$

$a_r = a'_r \Rightarrow a + rd = \frac{a'_r + d'_r}{-1d'}$   
 $a_x = a'_x \Rightarrow a + vd = \frac{a'_x + d'_x}{-rd'}$   
 $a + 9d = 0 \Rightarrow a = -9d$   
 $a + 9d = -1d' \Rightarrow d = \frac{9}{10}d'$   
 $a + vd = -rd' \Rightarrow d = \frac{v}{r}d'$   
 $\frac{a}{d} = \frac{rd'}{d} = r$  ✓

$9a_r = 9a_r a + 9a_r a \Rightarrow 9(a^r + d^r + rad) = 9a^r + 9ad + 9ra$   
 $9a^r + 9ad + 9ra = 9a^r + 9ad + 9ra$   
 $9a^r + 9ad - 9d^r = 0 \Rightarrow \frac{a}{d} = r$   
 $\frac{9a^r + 9ad - 9d^r}{d^r} = 0 \Rightarrow r^2 + r - 1 = 0 \Rightarrow (r+1)(r-1) = 0$   
 $r = -1, r = 1$   
 $a = -rd$   
 $a = 15d$

$\frac{a}{b} = \frac{c}{d} \Rightarrow b = \frac{a}{c} \cdot d$   
 $a_1 = a + d, a_2 = a + 2d$   
 $\frac{a_1}{a_2} = \frac{a+d}{a+2d} = \frac{a_1+d}{a_1+2d}$   
 $\frac{a_1}{a_2} = \frac{a_1+d}{a_1+2d} \Rightarrow \frac{a_1}{a_2} = \frac{a_1+d}{a_1+2d}$   
 $d = -\frac{ra_1}{r+1} \Rightarrow \frac{a_1}{a_1+d} = r = -1 \Rightarrow x = -1 = -2$  ✓

$a, b, c$   
 $a_1, a_2, a_3$   
 $a_1q^r + ra_1q^r = ra_1$   
 $q^r + r - r = 0 \Rightarrow (q+r)(q-1) = 0$   
 $q = -r$   
 $q = 1$   
 $\frac{a_q}{a_q} = q^r \Rightarrow q^r = r^r = -4$  ✓



$$* \kappa = \frac{q}{a}$$

$$\frac{a}{q} = \frac{a^r}{aq} = \frac{a^r}{a_r} \quad (r) \quad (9)$$

$$\frac{a_q}{(a_r)^r} + \frac{a_r}{(a)^r} = r \Rightarrow \frac{aq^a}{a^r q^r} + \frac{aq}{a^r} = r \Rightarrow \frac{q^r}{a^r} + \frac{q}{a} = r \xrightarrow{*} \kappa^r + \kappa - r = 0 \Rightarrow (\kappa + r)(\kappa - 1) = 0$$

$$\begin{matrix} \kappa = -r \\ \kappa = 1 \end{matrix}$$

$$\frac{q}{a} \begin{matrix} \nearrow -r \\ \searrow 1 \end{matrix} \Rightarrow \frac{a}{q} = \left[ -\frac{1}{r} \right] \checkmark$$

$$\Rightarrow \frac{a}{q} = \left[ \frac{1}{1} = 1 \right] \checkmark$$

$$a_r = \sqrt{a_r} \quad , \quad a_w = rV$$

$$aq^r = \sqrt{aq^r} \quad , \quad aq^r = rV$$

$$a^r q^r = aq^r \Rightarrow a \underbrace{(aq^r)}_{rV} = aq^r \quad q^r = rV \Rightarrow r q = r$$

$$a x^r = rV \Rightarrow a = \frac{rV}{1} = \frac{1}{r} \checkmark$$

$$\frac{1}{r} - \frac{1}{r} = \frac{r}{q} - \frac{r}{q} = \frac{1}{q} \checkmark$$

$$(r) \quad (10)$$

ضابطه اول  $\rightarrow a_0, a_3, a_4, a_9$

ضابطه دوم  $\rightarrow a_1, a_4, a_7$

ضابطه سوم  $\rightarrow a_2, a_5, a_8$

$$S_{11} = 1 + 4 + (1 + a) + 2 + (1 + a) + 4 + 0 + (2 + a) + 8 = 19 \rightarrow a = -2$$

جمع جملات خواسته شده از ضابطه سوم به دست میاد :

$$a_n = \left[ \frac{n}{K+2} \right] - 2 \xrightarrow{n=3K+2} \left[ \frac{3K+2}{K+2} \right] - 2 = \overset{\text{میاد بیرون}}{\left( 2 + \frac{K-2}{K+2} \right)} - 2 = \left[ \frac{K-2}{K+2} \right]$$

این عبارت به ازای  $K=0$  برابر ۱- و به ازای بقیه اعداد صحیح پس جواب خواسته شده ۲-.