

تکلیف شماره ۱۱

کلاس، تاریخ

$$1) \quad \begin{array}{l} \text{برای } n=1, \quad 1 = (n-1)^2 + 1 \\ \downarrow \\ \text{برای } n=2, \quad 4 = 1^2 + 1 \end{array} \quad \begin{array}{l} \text{برای } n=3, \quad 9 = 2^2 + 1 \\ \downarrow \\ \text{برای } n=4, \quad 16 = 3^2 + 1 \end{array}$$

$$\text{پس فرض می‌کنیم: } (n-1)^2 + 1 = n^2 \quad \text{برای } n=1 \quad \text{پس } 1 = 0^2 + 1$$

$$1) \quad n \leftarrow n+1, \quad n^2 \leftarrow n^2 + 4n + 4 \Rightarrow \frac{n^2}{1} = n^2$$

$$2) \quad n \leftarrow n+1, \quad 4n+4 \Rightarrow \frac{4n+4}{1} = 4n+4$$

$$3) \quad 4n+4, \quad 2n+2 \Rightarrow \frac{4n+4}{2} = 2n+2$$

$$4) \quad 2n+2, \quad 1n+1 \Rightarrow \frac{2n+2}{1} = 2n+2$$

$$2n, \quad 4n+4, \quad 2n+2, \quad 1n+1 \rightarrow n=1$$

$$\text{پس فرض می‌کنیم: } 2 \times 2^k + 2^k - 1 = 2^{k+1}$$

$$2 \times 2^{k-1} + 2^{k-1} - 1 = 2^k$$

$$a_n = \begin{cases} 2^k & n=2^k = 2, 4, 8, \dots \quad k=1, 2, 3, \dots \\ 2k+2 & n=2k+1 = 1, 3, 5, 7, \dots \quad k=0, 1, 2, \dots \\ \left\lfloor \frac{n}{2} \right\rfloor + a & n=2k+2 = 3, 6, 9, 12, \dots \quad k=0, 1, 2, \dots \end{cases}$$

$$\begin{array}{l|l} n=1 & k=0 \quad a_1 = 2 \\ n=2 & k=1 \quad a_2 = 4 \\ n=3 & k=1 \quad a_3 = 2 \\ n=4 & k=2 \quad a_4 = 6 \\ n=5 & k=2 \quad a_5 = 4 \\ n=6 & k=3 \quad a_6 = 8 \\ n=7 & k=3 \quad a_7 = 6 \\ n=8 & k=4 \quad a_8 = 10 \end{array}$$

$$n=0 \quad k=0 \quad a_0 = 1 \quad (2=1)$$

$$n=2 \quad k=1 \quad a_2 = 4 \quad a_0 + a_2 + \dots + a_8 = 10 + 10 = 20$$

$$n=4 \quad k=2 \quad a_4 = 6$$

$$n=8 \quad k=4 \quad a_8 = 10$$

$$a_2 + a_4 + a_6 + \dots + a_{14} = 10 + 10 = 20$$

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$$a_0 = 1F \quad a_v = 10,5$$

(K)

$$a = \frac{1}{b_0} \times (-1F) = -\frac{1}{b_0} \quad a_0 = -\frac{1}{b_0} \times 1F + b_0 \times 1F = 1F$$

$$b_0 + c = 2V$$

$$a_v = -\frac{1}{b_0} \times 1F + b_0 \times 10,5$$

$$b_0 + c = 19$$

$$b_0 + c = 2V$$

$$b_0 = 1 \quad b = 1F \quad c = 1$$

$$a_n = -\frac{1}{b_0} n^r + f n - 1 \Rightarrow \frac{a_{10}}{a_1} = \frac{-\frac{1}{b_0} \times 10^r + 10 \times 1F - 1}{-\frac{1}{b_0} \times 1^r + 1 \times 1F - 1} = 0$$

$$a_f = 1F \quad a_n = 10, \quad t_{10} = 0$$

(D)

$$a_f + f d = t_{10} + d d' \Rightarrow f d = d d' \quad |$$

$$t_{10} = t_{10} + d d' = 0 + d d' \quad \frac{t_{10}}{d} = \frac{d d'}{d} = \frac{f d}{d} = (F)$$

$$a_{ar} = d a_{ra} + k_{ar} a \quad a_{ar} - k_{ar} a = d a_{ra}$$

(4)

$$k_{ar} (k_{ar} - a) = d a_{ra} \quad (a_{ra} = a + f d)$$

$$k_{ar} = d a_1$$

$$k(a, f d) = d a_1$$

$$f d = k a_1$$

$$a_1 = -f d$$

$$\frac{a_f}{d} = \frac{a_1 + f d}{d} = \frac{k a_1}{f a_1} = \left(\frac{9}{f} \right)$$

$$a_1 = -f d \quad \frac{d}{d} = (1)$$

$$(c, b, a \text{ گنجینه‌ای}) \quad b = c + d \quad a = c + d$$

(1)

$$\frac{c}{f}, \frac{a}{f}, b \text{ گنجینه‌ای} \quad \frac{a}{f} = \frac{c}{f} + q \quad b = \frac{c}{f} + q^r$$

$$c + d = \frac{cq^r}{f} \quad \frac{cq^r}{f} - c = d$$

$$c + d = \frac{c}{f} \times q \times r \quad c + d = \frac{cq}{r} \quad rd = \frac{cq}{r} - c$$

$$\frac{r(\frac{q}{r} - 1)}{r(\frac{q^r}{f} - 1)} = \frac{1}{\frac{q}{r} + 1} = r \quad q + r = 1 \quad (a = -1) \quad r q = (-r)$$

$$(c, b, a \text{ گنجینه‌ای}) \quad b, c, q \quad a = q^r$$

(1)

$$(c, ra, rb \text{ گنجینه‌ای}) \quad ra = c + d \quad rb = c + d$$

$$rcq = c + d \quad rcq - c = d \quad \frac{c(rq - 1)}{c(rq^r - 1)} = \frac{d}{d} = r$$

$$rcq^r = c + d \quad rcq^r - c = d$$

$$rq^r - r = rq - 1 \quad rq^r - rq - 1 = 0 \quad q = \frac{r \pm 0}{1} = \cancel{r}, \left(\frac{-1}{f} \right)$$

$$\frac{aq}{aq} = q^r = \left(\frac{-1}{cf} \right)$$

$$\frac{a_u}{(a_r)^r} + \frac{a_r}{(a_u)^r} = r \quad \frac{a_0 q^0}{a_1^r q^r} + \frac{a_1 q}{a_1^r} = r \quad (9)$$

$$\frac{q^r}{a_1^r} + \frac{q}{a_1} = r \quad \left(\frac{q}{a_1} + r\right) \left(\frac{q}{a_1} - 1\right) = 0$$

$$\frac{a_1^r}{a_r} = \frac{a_1^r}{a_1 q} = \frac{a_1}{q} = \left(1 \pm \frac{1}{r}\right)$$

(10)

$$a_1^r = a_r, \quad a_0 = rV \quad a_1^r = a_1 q \quad a_1 = q$$

$$\frac{a_0}{a_1^r} = \frac{rV}{a_1^r} = \frac{rV}{q} = q^r \quad q^r, rV \Rightarrow q, V$$

$$a_1 = \frac{a_0}{q^r} = \frac{rV}{q} = \frac{1}{V} \quad \frac{1}{r} - a_1 = \frac{1}{r} - \frac{1}{V} \quad \left(\frac{1}{q}\right)$$