

1- $\{1\}, \{2,3,4\}, \{5,6,7,8,9\}, \{10,11,12,13,14,15,16\}$
 دسمة 1 دسمة 2 دسمة 3 دسمة 4
 المجموع الحسابي = $\frac{1+16}{2} \times 4 = 74$

2- $\{1\}, \{3K\}, \{3K+1\}, \{9K+3\}, \{9K+4\}, \{27K+12\}, \{27K+13\}, \{81K+49\}, \{81K+50\}$
 دسمة 1 دسمة 2 دسمة 3 دسمة 4 دسمة 5 دسمة 6 دسمة 7
 المجموع الحسابي = $\frac{1+81K+50}{2} \times 8 = 404K + 404$

3- $K=1$
 $\frac{141+404}{2} = 272.5$

4- $n=3K \rightarrow n=0,3,6,9,12,15,18,21,24,27,30,33,36,39,42,45,48,51,54,57,60,63,66,69,72,75,78,81,84,87,90,93,96,99$
 $-P(0)+K, -P(1)+K, -P(2)+K, \dots, -P(99)+K = K, 2, 3, \dots, 100$
 $\left[\frac{P}{0+P} \right] + a, \left[\frac{a}{1+P} \right] + a, \left[\frac{1}{2+P} \right] + a, \dots, \left[\frac{99}{99+P} \right] + a = 1+a, 1+a, 1+a, \dots, 1+a = 100(1+a) = 100 + 100a$
 $100 + 100a = 100 \rightarrow a = 0$
 $\left[\frac{99}{99+P} \right] + a = 1 - 1 - 1 + 1(1-1) = 0$

المجموع الحسابي

5- $ax^2+bx+c = \frac{1}{10}x(1-14) = -\frac{1}{10}x, a_0=14, a_1=10, a_2=-1$
 $-\frac{1}{10}(14^2)+14b+c=14 \rightarrow 14b+c=28$
 $-\frac{1}{10}(10^2)+10b+c=10 \rightarrow 10b+c=20$
 $-\frac{1}{10}(0^2)+0b+c=0 \rightarrow c=0$
 $14b=28 \rightarrow b=2$
 $10b+c=20 \rightarrow 20+c=20 \rightarrow c=0$
 $a_n = -\frac{1}{10}n^2 + 2n - 1 = \frac{a_{14}}{a} = \frac{-\frac{1}{10}(14^2)+2(14)-1}{-\frac{1}{10}(1)^2+2(1)-1} = \frac{14}{\frac{1}{10}} = 140$

6- $a^* = a + wd \cdot a', a_n = a + nd = a', a'_1 = 0 = a' + nd' \Rightarrow a' = -nd'$
 $a_n - a_k = kd = a'_n - a'_k = -nd' + kd' \Rightarrow d = \frac{nd'}{k}$
 $\frac{a'_1}{d} = \frac{a'_1 + kd'}{d} = \frac{-nd' + kd'}{\frac{nd'}{k}} = \frac{-1 + k}{1} = k$

$$q(a+d)^r = a(a+rd)a + r(a+d)a \Rightarrow qa^r + qd^r + 1rad = \omega a^r + 1oad + ra^r + rda \Rightarrow -q$$

$$0 = ra^r - qd^r + ad \Rightarrow (ra - qd)(a+rd) = 0 \Rightarrow \begin{cases} 1 \rightarrow a = \frac{qd}{r} \\ r \rightarrow a = -rd \end{cases} \Rightarrow \frac{qr}{d} = \frac{a+rd}{d} \Rightarrow$$

$$\begin{cases} 1 \rightarrow \frac{\frac{qd}{r} + rd}{d} = \frac{q}{r} \\ r \rightarrow -\frac{rd + qd}{d} = 1 \end{cases}$$

$$a, b, c \xrightarrow{\text{L.H.S.}} b, \frac{a}{r}, \frac{c}{r} \Rightarrow a+d, \frac{a}{r}, \frac{a+rd}{r} \Rightarrow \frac{a}{r} \div a+d = \frac{\frac{a+rd}{r}}{\frac{a}{r}} \Rightarrow$$

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

$$\Rightarrow \begin{array}{l} 1 \rightarrow d = 0 \\ r \rightarrow rd + r^2a = 0 \Rightarrow a = -\frac{rd}{r^2} \end{array} \Rightarrow q = \frac{a}{a+d} = \frac{-\frac{d}{r}}{-\frac{rd}{r^2} + d} = -1 \Rightarrow r^p q = r^p(-1) = -r^p$$

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$$a, b, c \xrightarrow{\text{مساواة}} \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} \begin{matrix} a \\ aq \\ aq^2 \end{matrix} \quad \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} b, \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} a, c \xrightarrow{\text{مساواة}} \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} aq, \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} a, aq^2 \xrightarrow{\text{مساواة}} aq^2 - \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} a = \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} a - \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} aq = \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} aq^2 - \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} a + \begin{matrix} 1 \\ 2 \\ 3 \end{matrix} aq = 0$$

$$\Rightarrow a(q-1)(q+1) = 0$$

- 1 $\rightarrow a = 0 \times \text{مساواة}$
- 2 $\rightarrow q = 1 \times \text{مساواة}$
- 3 $\rightarrow q = -1$

$$\Rightarrow \frac{a_1}{a_4} = \frac{aq^1}{aq^4} = q^3 = (-1)^3 = -1$$

$$\frac{a^r}{(a^r)^r} + \frac{a^r}{(a)^r} = r \Rightarrow \frac{a q^r}{a^r q^r} + \frac{a q}{a^r} = r \Rightarrow \frac{q^r + a q}{a^r} = r \Rightarrow r a^r - q^r - a q = 0 \Rightarrow \quad 9$$

$$(r a + q)(a - q) = 0 \Rightarrow \begin{cases} 1 \rightarrow a = \frac{q}{r} \\ r \rightarrow a = q \end{cases} \quad \frac{a^r}{a^r} = \begin{cases} 1 \rightarrow \frac{a^r}{a q} = \frac{a^r}{a^r} = 1 \\ r \rightarrow \frac{a^r}{a q} = \frac{a^r}{-r a^r} = -\frac{1}{r} \end{cases}$$

$$\begin{aligned} a^r &= \sqrt{a^r} \Rightarrow (a q^r)^r = a q^r \Rightarrow a^r q^r = a q^r \Rightarrow a q = 1 \Rightarrow a_a = a q^r = r \vee = a q \times q^r = r^r \\ &\Rightarrow q = r \Rightarrow a(r)^r = r \vee \Rightarrow a = \frac{1}{r} \Rightarrow \frac{1}{r} - \frac{1}{r} = \frac{1}{r} \end{aligned} \quad -10$$