

$$a_1, a_2, a_3, a_4, \dots \quad d = 4$$

$$a_n = a + (n-1)d \quad \text{الف}$$

$$a_{10} = a + (9)d = 41 \quad \text{ب}$$

$$d = 10 - 6 = 4$$

$$a_{10} = 6 + 4(9) = 42$$

$$S_{10} = \frac{10}{2} (42 + 6) = 240$$

الف ۲

$$a_1, a_2, a_3, a_4$$

$$a_5, a_6, a_7, a_8$$

$$a_9, a_{10}, a_{11}, a_{12}$$

$$d(n-1) + 1$$

$$f(v) + 1 = a_{12}$$

$$a_1 + 11d + a_1 + 10d + a_1 + 9d + a_1 + 8d$$

$$S_n = 4a_1 + 111d$$

$$4(6) + 111(4) = 494$$

$$1 + \sqrt{3}, 2, 3 - \sqrt{3}, \dots$$

$$d = 2 - 1 - \sqrt{3} = 1 - \sqrt{3}$$

$$a_{12} - a_{10} = a_1 + 11d - a_1 + 9d = 2d = 2(1 - \sqrt{3}) = 2 - 2\sqrt{3}$$

$$b_n = x, y, z \rightarrow y = \frac{x+z}{2} \rightarrow x+z = 2 \quad a_n = a^{rx}, r \times a^x, a^y \rightarrow r \times a^x = \frac{a^{rx} + a^y}{2}$$

$$y \times a^{rx} = a^{rx} + a^y \rightarrow a^y = y \times a^{rx} - a^{rx} = a^{rx}(y-1) \rightarrow a^y = a^{rx+1}$$

$$rx+1 = y \quad x + rx+1 = 2 \rightarrow rx = 1 \rightarrow x = 1, y = 2 \quad xy = 1 \times 2 = 2$$

$$rx-1 = \frac{rx-1 + yx}{2} \quad rx-1 = 2x-1 + yx \rightarrow rx-1 - x = \frac{1}{y}$$

$$-1, 0, 1, \dots \rightarrow a_4 = 9$$

$$a_n = 1, 3, 5, \dots$$

$$a_n = 1 + (n-1) \times 2 = 2n-1$$

$$b_m = 2, 5, 8, 11, \dots$$

$$b_m = 2 + (m-1) \times 3 = 3m-1$$

$$a_n = b_n$$

$$2n+1 = 3m-1$$

$$n = \frac{3m-2}{2}$$

مخرج

$$a_1 + a_3 + a_5 = 101$$

$$a_1 + a_1 + 2d + a_1 + 2d = 101$$

$$3a_1 + 4d = 101$$

$$a_1 + a_3 + a_5 = 21$$

$$a_1 + a_1 + 2d + a_1 + 2d = 21$$

$$3a_1 + 4d = 21$$

$$3a_1 + 4d = 21$$

$$3a_1 = -9 \rightarrow a_1 = -3$$

$$a_1 = b_1 = 1 \quad a_{14} = b_{14} = 15$$

$$a_2 = b_2 = 3 \quad a_{10} = b_{10} = 11$$

$$a_3 = b_3 = 5$$

$$a_{11} = b_{11} = 13$$

$$a_{12} = b_{12} = 14$$

$$3a_1 + 3d = 21$$

$$3a_1 + 4d = 101$$

$$3d = 80 \rightarrow d = 26$$

$$a_3 - a_2 + a_1 = a_1 + d \rightarrow -21 + 26 = 5$$

$$\frac{a_3 - a_2 + a_1}{a_1} = \frac{5}{-21} = -\frac{5}{21}$$

$$a_1 + a_r + a_r = 10$$

$$a_1 + a_1 + d + a_1 + r d = 10$$

$$r a_1 + r d = 10$$

$$a_{10} = r + (9)r = r9$$

$$a_r + a_w = r0$$

$$a_1 + r d + a_1 + r d = r0$$

$$r a_1 + r d = r0$$

$$\begin{aligned} r a_1 + r d &= 10 \times r \\ r a_1 + r d &= r0 \times r \end{aligned} \Rightarrow \begin{cases} -4a_1 + 4d = r0 \\ 4a_1 + 4d = r0 \end{cases} \quad (1)$$

$$10d = r0$$

$$d = r$$

$$r a_1 + \frac{r}{r} d = 10$$

$$r a_1 = 9 - a_1 = r$$

$$S_n = \frac{n}{r} [r a_1 + (n-1)d]$$

$$S_9 = 9 S_r \Rightarrow \frac{r}{9} \times 9 (r a_1 + 8d) = \frac{r}{9} \times 9 (r a_1 + r d)$$

$$r a_1 + 8d = r (r a_1 + r d)$$

$$-4a_1 + r a_1 = -8d + 4d$$

$$r a_1 = r d$$

$$d = r a_1$$

$$\begin{aligned} \frac{a_{10}}{a_r} &= \frac{a_1 + 9d}{a_1 + 4d} = \frac{a_1 + 9(r a_1)}{a_1 + 4(r a_1)} = \frac{a_1 + 9r a_1}{a_1 + 4r a_1} = \frac{r a_1}{r a_1} = r \end{aligned}$$

$$\frac{r0 - 11}{r-1} = \frac{r}{r} = r = d$$

$$\text{Using } a_r = 11 + (r-1)r = r^2 \Rightarrow$$

$$a_r = a_1 + (r-1)d = r^2 + (r-1)d = -10 \Rightarrow d = -r$$

$$r a_1 + (r-1)d = -10 \Rightarrow \frac{r^2 - r^2}{-r} + 1 = 9$$

$$10d = -10 \Rightarrow d = -r = -1$$