

کلاس دهم B

المشاكل

$$t_n = 5, 9, 13, 17, \dots$$

$\xrightarrow{+4} \quad \xrightarrow{+4} \quad \xrightarrow{+4}$

$$t_n = 4n + 1$$

$$t_{10} = 4 \times 10 + 1 = 41$$

$$t_n = 6, 10, 14, 18, \dots$$

$\xrightarrow{+4} \quad \xrightarrow{+4}$

$$d = 4, t_n = 4n + 2 \Rightarrow t_{10} = 42$$

$$S_n = \frac{n}{2} (a + L) \Rightarrow S_{10} = 5 (6 + 42) = 240$$

$$t_{32} = 4 \times 32 + 1 = 129$$

$$t_{32} = 4 \times 32 + 1 = 129 \Rightarrow \frac{1}{2} (118 + 129) = 123.5$$

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

$\xrightarrow{+1-\sqrt{3}} \quad \xrightarrow{+1-\sqrt{3}}$

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

$$\Rightarrow t_n = n(1 - \sqrt{3}) + 2\sqrt{3}$$

$$\Rightarrow t_{20} = 20 - 20\sqrt{3} + 2\sqrt{3}$$

$$t_{20} - t_{19} = a + (n-1)d \Rightarrow t_{19} = 19 - 19\sqrt{3} + 2\sqrt{3}$$

$$a_n = 2^n, 3 \times 2^n, 5^n$$

$$b_n = n, 2, y$$

$$x = 1, y = 3 \Rightarrow xy = 3$$

$$2^n = 5^n \Rightarrow d = + (2 \times 5^n)$$

$$\Rightarrow 5^n = 5 \times 5^{n-1} = 5^{n+1} = 5^y$$

$$\Rightarrow y = n + 1$$

$$\frac{n+y}{2} = 2 \Rightarrow n+y = 4, 3n+1 = 4$$

$$\Rightarrow 3n = 3, n = 1, y = 3$$

$$2n-1, 2n-1, 3n$$

$\xrightarrow{+3} \quad \xrightarrow{+3}$

$$d = 3$$

$$2n+1 = 3n \Rightarrow 1 = n \Rightarrow n = 1$$

$$t_1 = 1 + 3d \Rightarrow t_1 = 1 - 1 + 9 = 9$$

$$a_n = 3, 5, 7, 9, 11, \dots$$

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

$a_1 = b_1$	$a_1 r = b_1$
$a_2 = b_2$	$a_1 r^2 = b_1 r$
$a_3 = b_3$	$a_1 r^3 = b_1 r^2$
$a_{11} = b_{11}$	$b_1 r$

-4

$$a_1 + a_2 + a_3 = 11 \Rightarrow 3a_1 + 3d = 11$$

$$a_1 + a_3 + a_5 = 10 \Rightarrow 3a_1 + 5d = 10$$

$$3a_1 + 5d - 3a_1 - 3d = 11 - 10 \Rightarrow 2d = 1 \Rightarrow d = \frac{1}{2} \text{ and } a_1 = -\frac{9}{2}$$

$$\frac{a_3 - a_2 + a_1}{a_1} = \frac{a_1 + 2d - a_1 - d + a_1}{a_1} = \frac{a_1 + d}{a_1} = \frac{-\frac{9}{2} + \frac{1}{2}}{-\frac{9}{2}} = \frac{-4}{-\frac{9}{2}} = \frac{8}{9}$$

$$= -\frac{1}{9}$$

$$a_1 + a_2 + a_3 = 10 \Rightarrow 3a_1 + 3d = 10 \Rightarrow a_1 + a_3 = \frac{10}{3} \Rightarrow a_1 + a_3 = 10$$

$$a_2 + a_4 = 10 \Rightarrow 2a_1 + 6d = 10 \Rightarrow a_1 + 3d = 5 \Rightarrow a_4 - a_3 = 3d \Rightarrow d = \frac{1}{3}$$

$$\Rightarrow 5d = 10 \Rightarrow a_1 + a_3 = 10 \Rightarrow \begin{cases} a_1 + a_3 = 10 \\ a_1 + a_4 = 10 \end{cases} \Rightarrow a_4 - a_3 = 3d \Rightarrow d = \frac{1}{3}$$

$$\Rightarrow a_n = r_{n-1} \Rightarrow a_0 = r_0 - 1 = 19$$

-9

$$S_9 = 9 S_3 \Rightarrow \frac{9}{r} (a_1 + a_9) = \frac{9}{r} (a_1 + a_9) \Rightarrow \frac{9a_1 + 9a_9}{r} = \frac{9a_1 + 9a_9}{r}$$

$$\Rightarrow 9a_1 + 9a_9 = 9a_1 + 9a_9 \Rightarrow 18a_1 + 18d = 18a_1 + 18d \Rightarrow 18d = 18a_1$$

$$\Rightarrow a_1 = \frac{1}{r} d \quad \frac{a_{10}}{a_9} = \frac{a_1 + 9d}{a_1 + 8d} = \frac{19d}{9d} = \frac{19}{9}$$

-10

$$\frac{a_9 - a_1}{9 - 1} = \frac{19 - 1}{8} = d = 2 \Rightarrow a_n = r_{n+1} \Rightarrow a_9 = 23$$

$$b_1 = 3, b_2 = 23 \Rightarrow \frac{b_2 - b_1}{2 - 1} = d = 23 - 3 = 20$$

$$3, 23, 43, 63, 83, 103, 123, 143, 163, 183, 203, 223, 243, 263, 283, 303, 323, 343, 363, 383, 403, 423, 443, 463, 483, 503, 523, 543, 563, 583, 603, 623, 643, 663, 683, 703, 723, 743, 763, 783, 803, 823, 843, 863, 883, 903, 923, 943, 963, 983, 1003$$