

کلاس دهم B

المسائل الخمسة

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

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

$$t_n = 4n + 1$$

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

(الف)

(ب)

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

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

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

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

(الف)

(ب)

$$t_{32} = 4 = t_{29} + t_{30} + t_{31} + t_{32}$$

$$t_{32} = 4 \times 32 + 2 = 130 \Rightarrow \frac{4}{2} (118 + 130) = 494$$

(2)

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

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

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

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

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

$$t_{20} - t_{18} = a + 19d - a - 17d \Rightarrow t_{18} = 18 - 18\sqrt{3} + 2\sqrt{3}$$

$$18d = 2 - 2\sqrt{3}$$

-3

(2)

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

$$b_n = n, 2, y$$

$$2^n = 2^n \Rightarrow d = + (3 \times 2^n)$$

$$\Rightarrow 5 = 2 \times 2^n = 2^{n+1} = 5$$

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

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

$$\Rightarrow 3n=3, n=1, y=2$$

-4

(2)

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

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

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

$$d=3$$

$$2n+2=4n \Rightarrow 2=2n \Rightarrow n=1$$

$$t_4 = t_1 + 3d \Rightarrow t_4 = 1 - 1 + 9 = 9$$

(2)

-5

$$a_n = 3, 9, 27, 81, \dots$$

$$b_n = 1, 3, 9, 27, \dots$$

$a_1 = b_1$	$a_{10} = b_{10}$
$a_2 = b_2$	$a_{11} = b_{11}$
$a_3 = b_3$	$a_{12} = b_{12}$
$a_{11} = b_{11}$	$a_{13} = b_{13}$

(2)

-4

-V

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

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

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

(2)

$$\frac{a_3 - a_1 + a_1}{a_1} = \frac{a_1 + 2d - a_1 - d + a_1}{a_1} = \frac{a_1 + d}{a_1} = \frac{-11 + 11}{-11} = \frac{V}{-11}$$

$$= -\frac{1}{11}$$

$$a_1 + a_2 + a_3 = 10 \Rightarrow 3a_1 + 3d = 10 \Rightarrow a_1 + a_3 = 10$$

$$a_2 + a_4 = 10 \Rightarrow 2a_1 + 6d = 10 \Rightarrow a_1 + 3d = 5$$

$$\Rightarrow 5d = 5 \Rightarrow d = 1 \Rightarrow \begin{cases} a_1 + a_3 = 10 \\ a_1 + 3d = 5 \end{cases} \Rightarrow a_3 - a_1 = 2 \Rightarrow d = 1$$

(2)

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

-9

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

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

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

(2)

-10

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

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

$$3, 1, -1, -3, -5, -7, -9, -11, -13, -15, -17, -19, -21, -23, -25, -27, -29, -31, -33, -35, -37, -39, -41, -43, -45, -47, -49, -51, -53, -55, -57, -59, -61, -63, -65, -67, -69, -71, -73, -75, -77, -79, -81, -83, -85, -87, -89, -91, -93, -95, -97, -99, -101, -103, -105, -107, -109, -111, -113, -115, -117, -119, -121, -123, -125, -127, -129, -131, -133, -135, -137, -139, -141, -143, -145, -147, -149, -151, -153, -155, -157, -159, -161, -163, -165, -167, -169, -171, -173, -175, -177, -179, -181, -183, -185, -187, -189, -191, -193, -195, -197, -199, -201, -203, -205, -207, -209, -211, -213, -215, -217, -219, -221, -223, -225, -227, -229, -231, -233, -235, -237, -239, -241, -243, -245, -247, -249, -251, -253, -255, -257, -259, -261, -263, -265, -267, -269, -271, -273, -275, -277, -279, -281, -283, -285, -287, -289, -291, -293, -295, -297, -299, -301, -303, -305, -307, -309, -311, -313, -315, -317, -319, -321, -323, -325, -327, -329, -331, -333, -335, -337, -339, -341, -343, -345, -347, 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