

الف)	$5, 9, 13, \dots$ $d=4$ $a_n = 4n + 1$ $a_n = 4n + 1$	۱
ب)	$n=10 \rightarrow a_{10} = (4 \times 10) + 1 = 41$	۲
الف)	$6, 10, 14, 18, \dots$ $d=4$ $a_n = 4n + 2$ $a_1 = 6$ $a_{10} = 4(10) + 2 = 42$ $S = \frac{n}{2} (t_1 + t_{10}) \rightarrow S = \frac{10}{2} (6 + 42) = 240$	۲
ب)	$\frac{n}{2} (t_{29} + t_{32}) = \frac{f}{2} (130 + 118) = 494$ $\rightarrow$ جمله هشتم $a_{32} = (4 \times 32) + 2 = 130$ $a_{29} = (4 \times 29) + 2 = 118$	۲
۳	$1 + \sqrt{3}, 2, 3 - \sqrt{3}$ $d = 1 - \sqrt{3}$ $t_{23} = 1 + \sqrt{3} + 22(1 - \sqrt{3}) = 23 - 21\sqrt{3}$ $t_{25} = 1 + \sqrt{3} + 24(1 - \sqrt{3}) = 25 - 23\sqrt{3}$ $t_{25} - t_{23} = 25 - 23\sqrt{3} - 23 + 21\sqrt{3} = 2 - 2\sqrt{3}$	۲
۴	$a^{2x}, 2x a^{2x}, a^y$ $a_n \rightarrow 3 \times a^{2x} - a^{2x} = a^{2x} (3 - 1) = d = a^{2x} \times 2$ $3 \times a^{2x} + a^{2x} \times 2 = a^{2x} (3 + 2) = a^{2x+1} = a^y \rightarrow y = 2x + 1$ $xy = 1 \times 3 = 3$ $x + \frac{x+1}{2} = 2 \rightarrow 2x + 1 = 4 \rightarrow x = 1$ $y = 2x + 1 = 3$ $d = \frac{x+1}{2}$ $x + 2d = y$ $2d = x + 1$	۲
۵	$4x + 2x - 4 = 2x - 1 \rightarrow 1x - 4 = 2x - 2 \rightarrow 4x = 2 \rightarrow x = \frac{1}{2}$ $x = \frac{1}{2} \rightarrow -3, 0, 3$ $d=3$ $t_4 = -3 + 3(3) = 6$	۲

$a_n = 3, 5, 7, 9, 11 \dots \rightarrow a_n = 2n - 1$ $b_n = 2, 5, 8, 11, 14 \dots \rightarrow b_n = 3n - 1$ $a_n = 2n + 1 \rightarrow n = 20 = 41$ $b_n = 3n - 1 \rightarrow n = 20 = 59$ $4n - 1 \leq 41$ $4n \leq 42$ $n \leq 10.5 \rightarrow n \leq 10$	6
$a_1 + a_2 + a_3 = 3a_2 = 21 \rightarrow a_2 = 7$ $a_1 + a_3 + a_5 = 3a_3 = 105 \rightarrow a_3 = 35$ $a_1 + 21 + 35 = 21 \rightarrow a_1 = -11$ $\frac{a_3 - a_2 + a_1}{a_1} = \frac{-1}{-11} = \frac{1}{11}$	7
$t_1 + t_2 + t_3 = 15 \rightarrow 3t_1 + 3d = 15 \rightarrow 3(t_1 + d) = 15 \rightarrow t_1 + d = 5$ $t_4 + t_5 = 25 \rightarrow 4t_1 + 7d = 25$ $\begin{cases} 3t_1 + 3d = 15 \\ -2t_1 - 2d = -10 \end{cases}$ $\frac{5d = 15}{d = 3}$ $t_1 + 3 = 5 \rightarrow t_1 = 2$ $t_{10} = 2 + 9(3) = 29$	8
$S_3 + S_{9-3} = S_9 \rightarrow S_3 + S_{6-3} = 9S_3 \rightarrow S_{6-3} = 8S_3$ $S_a + 33d = 4fa + 2fd$ $9d = 11a \rightarrow d = \frac{11a}{9}$ $\frac{a_{20}}{a_5} = \frac{39d}{13d} = 3$	9
$t_1 = 11 \rightarrow 2a_f = 11 + 35 \rightarrow a_f = 23 \rightarrow$ $t_v = 35$ $a_1 = 31$ $a_k = 23$ $a_{f'} = 13$ $31 + 3d = 23 \rightarrow d = -\frac{8}{3}$ $a_k - a = \frac{11}{3} \rightarrow 11 - \frac{8}{3} = a_y$ $a_1 \rightarrow \dots \rightarrow a_y$	10