

الف) $5, 9, 13, \dots$ $d=4$ $a_n = 4n + 1$
 $a_n = 4n + 1$

ب) $n=10 \rightarrow a_{10} = (4 \times 10) + 1 = 41$

الف) $6, 10, 14, 18, \dots$ $d=4$ $S = \frac{n}{2} (t_1 + t_{10}) \rightarrow S = \frac{10}{2} (6 + 42) = 245$
 $a_n = 4n + 2$ $a_{10} = 4(10) + 2 = 42$
 $a_1 = 6$

ب) $\frac{n}{2} (t_{29} + t_{32}) = \frac{f}{2} (130 + 118) = 494$
 $\rightarrow 29, 30, 31, 32$ جمله هشتم
 $a_{32} = (4 \times 32) + 2 = 130$ $a_{29} = (4 \times 29) + 2 = 118$

$1 + \sqrt{3}, 2, 3 - \sqrt{3}$
 $\frac{1 + \sqrt{3}}{1 - \sqrt{3}} \quad \frac{2}{1 - \sqrt{3}}$
 $t_{23} = 1 + \sqrt{3} + 22(1 - \sqrt{3}) = 23 - 21\sqrt{3}$
 $t_{25} = 1 + \sqrt{3} + 24(1 - \sqrt{3}) = 25 - 23\sqrt{3}$
 $2 - 1 - \sqrt{3} = 1 - \sqrt{3} = d$
 $t_{25} - t_{23} = 25 - 23\sqrt{3} - 23 + 21\sqrt{3} = 2 - 2\sqrt{3}$

الف) $a^x, 2 \times a^x, a^y$
 $a_n \rightarrow 3 \times a^x - a^x = a^x (3 - 1) = d = a^x \times 2$
 $3 \times a^x + a^x \times 2 = a^x (3 + 2) = a^{x+1} = a^y \rightarrow y = x + 1$
 $xy = 1 \times 3 = 3$ $y = x + 1 = 3$ $d = \frac{x+1}{2}$
 $a_n \rightarrow x, 2, 2x+1$ $x + 2d = y$ $x + 2d = 2x + 1$
 $x + \frac{x+1}{2} = 2 \rightarrow 2x + 1 = 4 \rightarrow x = 1$ $y = 2x + 1 = 3$ $2d = x + 1$

$\frac{4x + 2x - 4}{2} = 2x - 1 \rightarrow 1x - 4 = 2x - 2 \rightarrow 4x = 2 \rightarrow x = \frac{1}{2}$
 $x = \frac{1}{2} \rightarrow -3, 0, 3$ $d=3$
 $t_4 = -3 + 3(3) = 6$

$a_n = 3, 5, 7, 9, 11 \quad \left. \begin{array}{l} 5, 11, \dots \end{array} \right\} \rightarrow a_n = 4n - 1$ $b_n = 2, 5, 11, 14 \quad \left. \begin{array}{l} 5, 11, \dots \end{array} \right\} \rightarrow$ $a_n = 2n + 1 \rightarrow n = 20 = 41$ $b_n = 3n - 1 \rightarrow n = 20 = 59$ $4n - 1 \leq 41$ $4n \leq 42$ $n \leq 10.5 \rightarrow \text{مشترک}$	۶
$a_1 + a_2 + a_3 = 3a_2 = 21 \rightarrow a_2 = 7$ $a_1 + a_3 + a_5 = 3a_3 = 105 \rightarrow a_3 = 35$ $a_1 + 21 + 35 = 21 \rightarrow a_1 = -35$ $\frac{35 - 7 - 35}{-35} = \frac{-7}{-35} = \frac{1}{5}$	۷
$t_1 + t_2 + t_3 = 15 \rightarrow 3t_1 + 3d = 15 \rightarrow 3(t_1 + d) = 15 \rightarrow t_1 + d = 5$ $t_4 + t_5 = 25 \rightarrow 4t_1 + 7d = 25$ $\begin{cases} 3t_1 + 3d = 15 \\ -2t_1 - 2d = -10 \end{cases}$ $\frac{5d = 15}{d = 3}$ $t_1 + 3 = 5 \rightarrow t_1 = 2$ $t_{10} = 2 + 9(3) = 29$	۸
$S_3 + S_{9-3} = S_9 \rightarrow S_3 + S_{6-3} = 9S_3 \rightarrow S_{6-3} = 8S_3$ $S_a + 33d = 4fa + 2fd$ $9d = 11a \rightarrow d = \frac{11a}{9}$ $\frac{a_{20}}{a_5} = \frac{39d}{13d} = 3$	۹
$t_1 = 11 \rightarrow 2a_f = 11 + 35 \rightarrow a_f = 23 \rightarrow \text{مشترک}$ $t_v = 35$ $a_1 = 31$ $31 + 3d = 23 \rightarrow d = -\frac{8}{3}$ $a_k = 23$ $a_j = 13$ $a_k - a_j = \frac{11}{3} \rightarrow 11 \frac{1}{3} = a_y$ مشترک	۱۰

$$a_1 \quad \text{---} \quad \text{---} \quad \text{---} \quad \text{---} \quad \text{---} \quad a_y$$

مشترک