

الف) $t_n = 3n^2 - 1$
 $n=1 \rightarrow 3(1) - 1 = 2$
 $n=2 \rightarrow 3(4) - 1 = 11$
 $n=3 \rightarrow 3(9) - 1 = 26$
 $n=4 \rightarrow 3(16) - 1 = 47$
 $n=5 \rightarrow 3(25) - 1 = 74$
 $\Rightarrow \{2, 11, 26, 47, 74, \dots\}$

ب) $t_n = \frac{2n+1}{n+2}$

$n=1 \rightarrow \frac{2(1)+1}{1+2} = \frac{3}{3} = 1$
 $n=2 \rightarrow \frac{2(2)+1}{2+2} = \frac{5}{4}$
 $n=3 \rightarrow \frac{2(3)+1}{3+2} = \frac{7}{5}$
 $n=4 \rightarrow \frac{2(4)+1}{4+2} = \frac{9}{6} = \frac{3}{2}$
 $n=5 \rightarrow \frac{2(5)+1}{5+2} = \frac{11}{7}$

$n=1 \rightarrow \frac{2}{1+2} = \frac{2}{3}$

$n=2 \rightarrow \frac{4}{4} = 1$
 $n=3 \rightarrow \frac{7}{5}$
 $n=4 \rightarrow \frac{9}{6} = \frac{3}{2}$
 $n=5 \rightarrow \frac{11}{7}$

$\left\{ \frac{2}{3}, \frac{5}{4}, \frac{7}{5}, \frac{9}{6}, \frac{11}{7}, \dots \right\}$

الف) $t_n = \frac{(-1)^n}{\sqrt{n+3}}$
 $t_{13} = \frac{(-1)^{13}}{\sqrt{13+3}} = \frac{-1}{\sqrt{16}} = \frac{-1}{4}$

ب) $t_n = 2n - \left[\frac{n}{2} \right]$

$t_{13} = 2(13) - \left[\frac{13}{2} \right] = 26 - 6 = 20$
 $\left[\frac{13}{2} \right] = 6$

الف) $t_n = 2n - 10 \Rightarrow 2n - 10 < 0 \rightarrow 2n < 10 \rightarrow n < 5 \rightarrow \{1, 2, 3, 4\} \rightarrow \boxed{14}$

ب) $t_n = n^2 - 12n + 2$

$(n-1)(n-2) < 0 \rightarrow \frac{2}{1} \rightarrow (2, 1) \rightarrow 2, 1 \rightarrow \boxed{15}$

الف) $t_n = 2n - 14 \rightarrow \frac{2}{0} \rightarrow 2n - 14 \leq 0 \rightarrow 2n \leq 14 \rightarrow n \leq 7 \rightarrow \{1, 2, 3, 4, 5, 6, 7\} \rightarrow \boxed{18}$

ب) $t_n = n^2 - 12n + 27$

$(n-3)(n-9) \leq 0 \rightarrow \frac{3}{9} \rightarrow [3, 9] \Rightarrow 3, 4, 5, 6, 7, 8, 9 \rightarrow \boxed{15}$

الف) $t_2 = 7$
 $t_9 = 22$
 $t_3 = ? \rightarrow t_2 - t_3 = 7 - 3 = 4$
 $t_3 = 22 - 4 = 18$
 $\Rightarrow \boxed{18}$

