Find the A.P whose 7th and 12th term are 34, and 64 respectively. Also find 10th term.

Given, $t_7 = 34$, $t_{12} = 64$,

now, $t_{12} = a + 11d = 64$ — i

$t_7 = a + 6d = 34$ — ii $\}(-)$

$5d = 30$

$\Rightarrow d = \frac{30}{5} = 6$, now, (i) $a + 11d = 64$

$a + 11 \times 6 = 64$

$a = 64 - 66 = -2$

$\therefore$ series, $a, a+d, a+2d, a+3d \ldots$

$-2, 4, 10, 16, \ldots$

$t_{10} = a + (n-1)d$

$= -2 + (10-1)6$

$\Rightarrow -2 + 54 = 52$. Ans.

Is 254 a term of the A.P 4, 9, 14, 19, .... ?

$a = 4, \quad d = 5 \quad \{t_2 - t_1 = 9 - 4 = 5, \; t_3 - t_2 = 14 - 9 = 5\}$

$t_n = 254 \quad n = ?$

$t_n = a + (n-1)d$

$\Rightarrow 254 = 4 + (n-1)5$

$\Rightarrow 254 - 4 = 5n - 5$

$\Rightarrow 250 + 5 = 5n$

$\Rightarrow \frac{255}{5} = n$

$\Rightarrow 51 = n$ Ans.

$\therefore$ 254 is the 51$^{th}$ term of the given A.P.

If $(x+2)$, $3x$ and $(4x+1)$ are in A.P. then find $x$.

$(x+2)$, $3x$, $(4x+1)$ are in A.P

$\therefore \quad 3x - x - 2 = 4x + 1 - 3x$

$\Rightarrow \quad 2x - 2 = 1x + 1$

$\Rightarrow \quad 2x - 1x = 1 + 2$

$\Rightarrow \quad x = 3$. Ans

which term of the A.P 1, 4, 7, ... is 55?

$a = 1, \quad d = 3$ $\left\{ t_2 - t_1 \;\; 4 - 1 = 3 \right.$

$t_n = 55 \quad n = ?$ $\left\{ t_3 - t_2 \;\; 7 - 4 = 3 \right.$

$t_n = a + (n-1)d$

$\Rightarrow 55 = 1 + (n-1)3$

$\Rightarrow 55 - 1 = 3n - 3$

$\Rightarrow 54 + 3 = 3n$

$\Rightarrow \frac{57}{3} = n$

$\Rightarrow n = 19$ Ans.