6. Which term of AP 11, 8, 5, 2 ..... is -150?

$a = 11$, $d = 8 - 11 = -3$

$a_n = -150$

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

$-150 = 11 + (n-1)(-3)$

$-150 = 11 + (-3n + 3)$

$-150 = 11 - 3n + 3$

$-150 - 14 = -3n$

$\frac{-164}{-3} = n$

$n - 1 = -3$

$n = \frac{161}{3} + 1$

$= \frac{164}{3} = \frac{4}{533}$

Which is not an integer.

$a_{11} = a + 10d = 38$

$a_{16} = a + 15d = 73$

$5d = 35$

$d = 7$

$a + 10 \times 7 = 38$

$a = 38 - 70$

$\therefore t_{31} = a + 30d = -32 + 20 \times 7$

$= -32 + 210 = 178$

3rd term = 12

$a + 2d = 12$

50th term = 106

at

$a_{50} = 106$

$a_{50} = a + (50-1)d$

$\Rightarrow a + 49d = 106$

$a_3 = 12$

$\Rightarrow a_3 = a + (3-1)d$

$a + 2d = 12$

$a + 49d - a - 2d = 106 - 12$

$\Rightarrow 47d = 94$

$\Rightarrow d = \frac{94}{47} = 2$

$\Rightarrow a + 2d = 12$

$\Rightarrow a + 4 = 12$

$\Rightarrow a = 12 - 4 = 8$

$\Rightarrow a_{29} = (a + 28)d$

$\Rightarrow a + 28d$

$= 8 + 28 \times 2$

$= 8 + 56$

$= 64$

2

$a_3 = 4$

$a + 2d = 4$ (i)

$a_9 = -8$

$a + 8d = -8$ (ii)

Subtracting equation (i) from eq (ii)

$6d = -12$

$\Rightarrow d = -2$

$a + 2 \times (-2) = 4$

$\Rightarrow a = 8$

$a + (n-1)d = 0$

$\Rightarrow 8 + (n-1)(-2) = 0$

$\Rightarrow n = 5$

16

$a_{17} - a_{10} = 7$

$[a + (17-1)d] - [a + (10-1)d] = 7$

$\Rightarrow a + 16d - (a + 9d) 7$

$\Rightarrow 7d = 7$

$\Rightarrow d = 1$

17

3, 15, 27, 39 .... will be 132 more than 54th term?

$a = 3$ $d = 15 - 3 = 12$ $n = 54$

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

$a_{54} = 3 + (54-1)12$

$= 3 + (53)12$

$= 3 + 63c$

$= 639$

$a_n = a_{54} + 132$

$= 639 + 132$

$= 771$

$\Rightarrow 771 = 3 + (n-1)12$

$\Rightarrow 771 = 3 + 12n - 12$

$\Rightarrow 771 = -9 + 12n$

$\Rightarrow 771 + 9 = 12n$

$\Rightarrow \frac{786}{12} = n$

$\Rightarrow 65 = n$

So 771 is A_n 65th term

$\Rightarrow A_{100} - a_{100} = 100$

$\Rightarrow A + 99d - (a + 99d) = 100$

$\Rightarrow A + 99d - a - 99d = 100$

$\Rightarrow A - a = 100$

$\Rightarrow A_{1000} - a_{1000} = ?$

$\Rightarrow A + 999d - a - 999d$

$\Rightarrow A - a$

That means $A - a < 100$