1.1 - Applications

1. Finding d:

example 1: You are given 2 consecutive terms: e.g. t4 = 7 and t5 = 2
 🡪 d = t5 – t4 = -5.

example 2: You are given 2 non-consecutive terms: e.g. t4 = 5 and t12 = 25
 🡪 t12 = t4 + 8d
 25 = 5 + 8d so 8d = 20 and finally: d = 2.5
2. Finding the general term:

You have to know/find t1 and d first… e.g. t1 = 5 and d = 3
And then, you just leave n undefined: $t\_{n}=t\_{1}+\left(n-1\right)d$
 *tn =* $5 + (n-1)×3 $ or *tn =* 3*n* + 2
3. Finding t1:

if you are given or can find another term and d: e.g: t4 = 12 and d = -3.
 🡪 t4 = t1 + 3d so t1 = t4 – 3d finally t1 = 21.
4. Finding the value of a term:

Once you have the general term, just replace n by the rank of the term you want…
example: if $t \_{n}= 5 + (n-1)×4$ , then t22 = 89
5. Finding the rank of a term/ finding the number of terms in a finite sequence:

example: you are given this arithmetic sequence: 7, -4, -15, …, -202.
How many terms are there? In other words, what is the rank of the term -202?
Let’s use the general formula when tn is -202, to find which n works…
$t\_{n}=t\_{1}+\left(n-1\right)d$ so $-202=7+\left(n-1\right)×(-11)$
 $-202=7-11n+11$
 $-220 = - 11n$
 and finally : $n=20$
 This sequence has 20 terms.

Attention: Subscript Issues! cf Your turn p 11.