**Answer on Question #77312 – Math – Calculus**

**i)**

let we use formula to find n-th element of sequence, so:

$$a_n = a_1 + (n-1)d$$

So let we use our inputs, it will be:

$$100 = k + (n-1)k$$

$$k(1 + n - 1) = 100$$

$$n = \frac{100}{k}$$

**Answer:** n=$\frac{100}{k}$, where n is the number of terms in the series

**ii)**

let we use formula to find n-first elements of arithmetic sequence:

$$S_n = \frac{2a_1 + d(n-1)}{2} n$$

From here

$$S_n = \frac{2k + k(\frac{100}{k} - 1)}{2} \cdot \frac{100}{k}$$

$\frac{2k+k(\frac{100}{k}-1)}{2} \cdot \frac{100}{k} = 100 + \frac{5000}{k} - 50 = 50 + \frac{5000}{k}$

**Answer:** $50 + \frac{5000}{k}$

**iii)**

increment of this arithmetic progression is

$$d = 2k + 3 \quad because\ of \quad d = a_2 - a_1 = 4k + 4 - (2k + 1)$$

So to find 50-th element of progression we use

$$a_n = a_1 + (n-1)d,$$

from where

$$a_{50} = 2k + 1 + (50 - 1) * (2k + 3) = 2k + 1 + 98k + 147 = 100k + 148$$

**Answer:** $100k + 148$