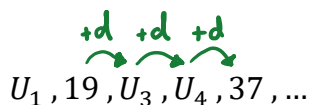


The 2nd term of an arithmetic sequence is 19 and the 5th term is 37.

a) Find the 10th term

b) The sum of the first n terms of this sequence exceeds 1000. Find the least value of n



2nd term is 19

5th term is 37

There are 3 differences from 2nd to 5th term

$$37 = 19 + 3d$$

$$18 = 3d$$

$$6 = d$$

$$U_1 = 13$$

$$U_{10} = U_1 + 9d$$

$$U_{10} = 13 + 9 \times 6$$

$$U_{10} = 13 + 54$$

$$U_{10} = 67$$

b)

sum of the first n terms

$$S_n = \frac{n}{2}(2U_1 + (n-1)d)$$

$$S_n = \frac{n}{2}(2 \times 13 + (n-1) \times 6)$$

$$S_n = \frac{n}{2}(26 + 6n - 6)$$

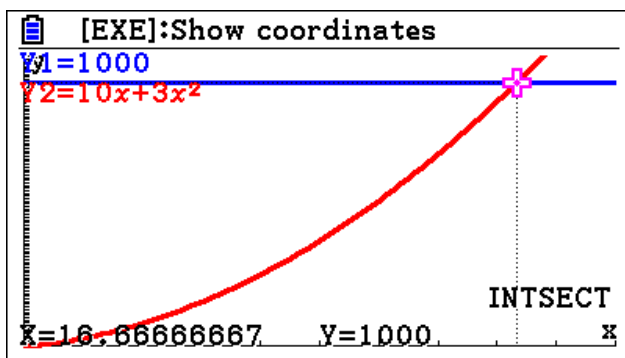
$$S_n = \frac{n}{2}(20 + 6n)$$

$$S_n = 10n + 3n^2$$

sum of the first n terms of this sequence exceeds 1000

$$10n + 3n^2 > 1000$$

Our graphical calculator can help



Plot $y = 10x + 3x^2$
 And $y = 1000$

$$n = 17$$

$$S_{16} = 928$$

$$S_{17} = 1037$$

We can also use the table function

| X | Y2 |
|----|------|
| 14 | 728 |
| 15 | 825 |
| 16 | 928 |
| 17 | 1037 |

1037