

For the following sequence 28 , 25 , 22 , ...

- Which is the first negative term of the sequence?
- Which is the first term of the series that makes the sum of the series become negative?

a)

$$U_n = U_1 + (n - 1)d$$

$$U_n = 28 + (n - 1)(-3)$$

$$U_n = 28 - 3n + 3$$

$$U_n = 31 - 3n$$

$$U_n < 0$$

$$31 - 3n < 0$$

$$31 < 3n$$

$$10\frac{1}{3} < n$$

$$n = 11$$

The 11th term is the first negative term

X	Y1			
1	28			
2	25			
3	22			
4	19			
5	16			
6	13			
7	10			
8	7			
9	4			
10	1			
11	-2			

X=11

b)

$$S_n = \frac{n}{2}(2 \times 28 + (n - 1)(-3))$$

$$S_n = \frac{n}{2}(56 - 3n + 3)$$

$$S_n = \frac{n}{2}(59 - 3n)$$

$$S_n = 29.5n - 1.5n^2$$

$$S_n < 0$$

$$29.5n - 1.5n^2 < 0$$

$$59n - 3n^2 < 0$$

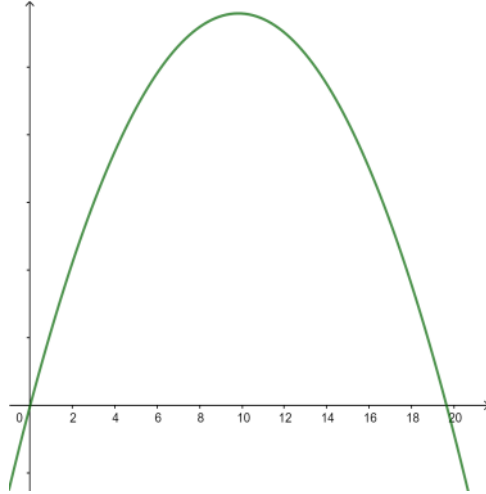
Solve

$$59n - 3n^2 = 0$$

$$n(59 - 3n) = 0$$

$$n = 0, 59 - 3n = 0$$

$$n = 0, n = \frac{59}{3}$$



$$n > \frac{59}{3}$$

$$n = 20$$

The 20th term is the first term that makes the sum negative

NORMAL FLOAT AUTO REAL RADIAN MP				
Plot1 Plot2 Plot3				
Y1	X/2(2*28+(X-1)*(-3))			
Y2	=			
Y3	=			
Y4	=			
Y5	=			
Y6	=			
Y7	=			
Y8	=			
Y9	=			
NORMAL FLOAT AUTO REAL RADIAN MP				
PRESS + FDR ΔTb1				
X	Y1			
11	143			
12	138			
13	130			
14	119			
15	105			
16	88			
17	68			
18	45			
19	19			
20	-10			
21	-42			

X=20