For the following sequence 28 , 25 , 22 , ...
   a) Which is the first negative term of the sequence?
   b) Which is the first term of the series that makes the sum of the series become negative?

a)

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

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

$U_n = 28 - 3n + 3$

$U_n = 31 - 3n$

$U_n < 0$

$31 - 3n < 0$

$31 < 3n$

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

$n = 11$

The 11th term is the first negative term

b)

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

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

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

$S_n = 29.5n - 1.5n^2$

$S_n < 0$

$29.5n - 1.5n^2 < 0$

$59n - 3n^2 < 0$

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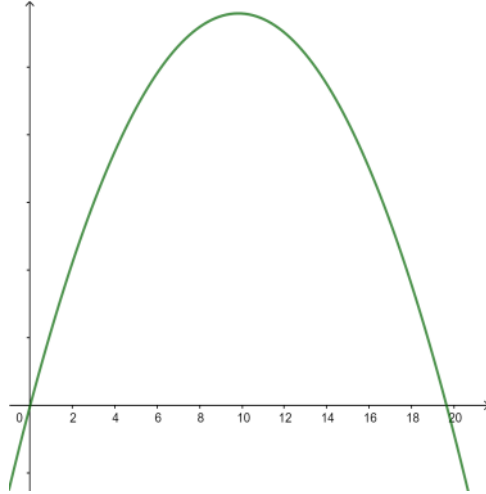
$$59n - 3n^2 = 0$$

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

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

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

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

$$n = 20$$

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