Problem of the Week

Problem D

Difference Detective

The *non-negative difference* between two numbers a and b is $b - a$ or $a - b$, whichever is greater than or equal to 0. For example, the non-negative difference between 24 and 64 is 40.

Consider the sequence with first term 74, second term 60, and each term after equal to the non-negative difference between the previous two terms. That is, the third term is $74 - 60 = 14$, the fourth term is $60 - 14 = 46$, and the fifth term is $46 - 14 = 32$. So, the first five terms in the sequence are:

$$74, 60, 14, 46, 32$$

Determine the sum of the first 1306 terms in the sequence.