The prime ant looks along the number line starting at 2. When she reaches a composite number, she divides by its least prime factor, and adds that factor to the previous term, and steps back.

2	3	(4)	5	6	7	8	9	10
2	5	2	5	(6)	7	8	9	10
2	5	2	7	3	7	(8)	9	10
2	5	2	7	3	(9)	4	9	10
2	5	2	7	(6)	3	4	9	10
2	5	2	(9)	2	3	4	9	10
2	5	5	3	2	3	4	(9)	10
2	5	5	3	2	3	7	3	(10)

Figure 1: An illustration of the prime ant's positions after the first 7 steps.

Question. Does the ant eventually stay to the right of any fixed position?

Related.

1. Are there any positions that stay permanently greater than 7? Than 11?
2. Does sequence of numbers converge in the long run? If so, what to? $(2, 5, 5, 3, 2, \ldots)$
3. Let S be a subset of $\mathbb{N}$ and let $f : S \times S^c \to \mathbb{N}^2$. For what "interesting" sets S and functions f can we answer the above questions?
   (In the example S is the prime numbers and f maps $(p, c) \mapsto (p + \mathrm{lpf}(c), \mathrm{gpf}(c))$.)

References.

https://codegolf.stackexchange.com/q/144695/53884

https://math.stackexchange.com/q/2487116/121988

https://oeis.org/A293689