PROBLEM OF THE WEEK #3
(Fall 2019)

The number 142857 becomes exactly three times as great when its initial (decimal) digit is transferred from its beginning to its end:

$$142857 \times 3 = 428571.$$

Show that there is no positive integer which becomes exactly seven times as great when its initial (decimal) digit is transferred from its beginning to its end.

[Please fully explain your answer.]

Solutions should be submitted to Cinda Furry, in Gardner Hall 435, by 4:00 P.M. on Wednesday, October 9, 2019.

Every week, the best solution submitted earns a $10 Platteville gift certificate; the top scorer each semester also wins a cash award. Good luck!
You can always see the Problem of the Week (and complete rules) online at:

`http://uwpmath.weebly.com/`