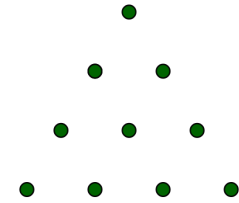




PROBLEM OF THE WEEK #7
(Fall 2022)

If N dots can be arranged in rows to form an equilateral triangle, with one dot in the first row, two dots in the second row, and in general k dots in the k^{th} row, then N is called a *triangular number*. For instance, ten is a triangular number (ten dots form a 4-row triangle).



In base 9, ten is written 11. Show that every number whose base-9 digits are all 1s is triangular.

[Please fully explain your answer.]

Email solutions to kwonmi@uwplatt.edu by 4:00pm on Wednesday, November 2, 2022.

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/>