UNIVERSITY OF WISCONSIN
PLATTEVILLE
DEPARTMENT OF MATHEMATICS

Problem of the Week #9

(Spring 2024)

Let $p(x)$ be a polynomial with integer coefficients. Suppose that the equation $p(x) = 1$ has exactly r integer solutions, and the equation $p(x) = 0$ has exactly s integer solutions, with $r > 0$ and $s > 0$. Show that the pair (r, s) is either $(1, 1)$, $(1, 2)$, or $(2, 1)$.

[Please fully explain your answer.]

Email solutions to `kwonmi@uwplatt.edu` by 2:00pm on Wednesday, April 3, 2024.

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/`