



UNIVERSITY OF WISCONSIN
PLATTEVILLE
DEPARTMENT OF MATHEMATICS

PROBLEM OF THE WEEK #10
(Spring 2021)

Let $f(x)$ and $g(x)$ be polynomials with rational coefficients, with $g(x) \neq 0$. Suppose that there are infinitely many integers a for which $\frac{f(a)}{g(a)}$ is an integer. Show that $f(x)$ is a multiple of $g(x)$; in other words, $f(x) = g(x)q(x)$, where $q(x)$ is a polynomial with rational coefficients.

[Please fully explain your answer.]

Email your solution to kwonmi@uwplatt.edu by 4:00pm on Wednesday, April 7, 2021.

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/>