UNIVERSITY OF WISCONSIN
PLATTEVILLE
DEPARTMENT OF MATHEMATICS

Problem of the Week #1

(Fall 2021)

Given that a, b, c, and d are positive real numbers with $a \geq b \geq c \geq d > 0$, show that

$$(a + 2b + 3c + 4d)(a^2 + b^2 + c^2 + d^2) < (a + b + c + d)^3.$$

[Please fully explain your answer.]

Email solutions to `kwonmi@uwplatt.edu` by 2:00pm on Wednesday, September 22, 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/`