MATH PROBLEM OF THE WEEK

Spring 2025

Problem 4

Suppose $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ are the roots of the degree 5 polynomial

$$f(x) = x^5 - 2x^4 - 6x^3 + 6x^2 + 6x + 1.$$

Then find the value of $\alpha_1^2 + \alpha_2^2 + \alpha_3^2 + \alpha_4^2 + \alpha_5^2$. Justify your answer.

We welcome solutions from everyone. The undergraduate participant from the NMSU main campus with the most correct solutions at the end of the semester will receive an award of $500.

Solutions must be mathematically rigorous and originally obtained by the participants.
Participants will be notified if their solutions are correct within a week.

Deadline: Monday, March 17, 10 am

Next problem will be posted on March 17

Send solutions to: mathpotw@nmsu.edu

More information at: https://math.nmsu.edu/activities/math-problem-of-the-week.html