



PROBLEM OF THE WEEK #7  
(Fall 2023)

Find real numbers  $a$  and  $b$  for which:

$$\begin{cases} a^4 + 8b = 4(a^3 - 1) - 16\sqrt{3}, \\ b^4 + 8a = 4(b^3 - 1) + 16\sqrt{3}. \end{cases}$$

[Please fully explain your answer.]

Email solutions to [swensonj@uwplatt.edu](mailto:swensonj@uwplatt.edu) by 2:00pm on Wednesday, November 1, 2023.

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/>