UNIVERSITY OF WISCONSIN
PLATTEVILLE
DEPARTMENT OF MATHEMATICS

Problem of the Week #4

(Spring 2022)

Let x and y be real numbers such that

$$\begin{cases} \log \sin x + \log \cos x &= -1, \\ \log(\sin x + \cos x) &= -1 + \frac{1}{2} \log y, \end{cases}$$

where "log" denotes the common (base-10) logarithm. Solve for y.

[Please fully explain your answer.]

Email solutions to `kwonmi@uwplatt.edu` by 2:00pm on Wednesday, February 23, 2022.

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/`