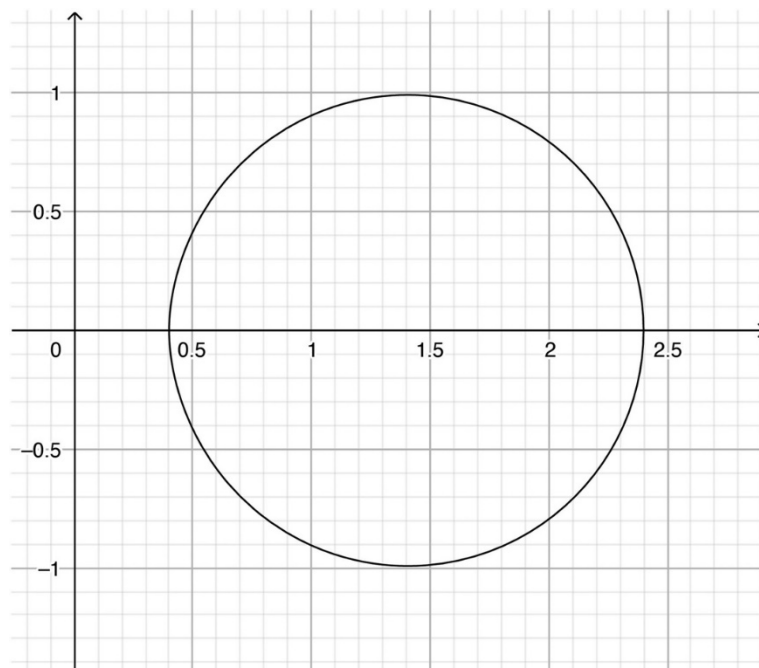


UC Merced Applied Math Problem of the Month

October 2022



Circle Sleuth: The attached figure shows the graph of the polar curve

$$r = \sqrt{\cos(2\theta)} + \frac{7}{5} \cos \theta$$

in the Cartesian plane for values of θ where $\sqrt{\cos(2\theta)}$ exists. Determine (with justification) whether the graph is a circle.

Note: This is one of the problems in the Playground section of the current issue of the Math Horizons magazine, which features problems for students at the undergraduate and (challenging) high school levels. You can find this problem as well as other interesting problems:

<https://www.tandfonline.com/doi/full/10.1080/10724117.2022.2092341>

We encourage all participants to submit their solutions to MHproblems@maa.org and MHsolutions@maa.org *in addition to* the Applied Math at UC Merced. The deadline for submitting solutions to Math Horizons is October 31, 2022, and for submitting to the Applied Math Box folder is November 7, 2022.

To submit your solutions for a chance to win an Amazon gift card, and to find out detailed contest rules,

- scan the QR code to the right, or
- go to <https://appliedmath.ucmerced.edu/news-events/problem-month>

