

# The Problem of the Month

## June 2022

Find the volume of the solid obtained by rotating the region enclosed by the curves

$$y = \frac{1}{1+x^4}, \quad y = 0, \quad x \geq 0$$

about the  $x$ -axis. Compute any resulting definite integral without the aid of a computer<sup>†</sup>. Give your answer in the form  $\frac{a\pi^2\sqrt{b}}{c}$ , where  $a, b$  and  $c$  are positive integers.



<sup>†</sup> You may assume that  $\int_0^\infty \frac{1}{1+x^4} dx = \frac{\pi\sqrt{2}}{4}$ . See for example, Yusuf Z. Gürtaş (2022), An Unorthodox Approach to Skinning a Definite Integral, *The College Mathematics Journal*, 53:2, 134-139, DOI: 10.1080/07468342.2022.2011543