

1096-VR-2577 **Horia I. Petrache*** (hpetrach@iupui.edu), 402 N. Blackford St., LD154, Physics, IUPUI,
Indianapolis, IN 46202. *Correspondence between geometric and differential definitions of the sine
and cosine.*

In textbooks, the familiar sine and cosine functions appear in two forms: geometric, in the treatment of unit circles and triangles, and differential, as solutions of differential equations. These two forms correspond to two different definitions of trigonometric functions. By using elementary geometry and elementary calculus, it is shown that the two definitions are equivalent. This treatment also addresses the connection between circular and harmonic motion in a more abstract form. This approach can help students enhance their ability to think abstractly in addition to acquiring more insight into trigonometric functions. (Received September 17, 2013)