

A diagram showing the sine, cosine, and versine of an angle. Image: Qef and Steven G. Johnson, via Wikimedia Commons.

The versine is a fairly obvious trighting tion to define and seens to have been used as far back as 400 CE in India. But the havers in the have been more in port int in more recent history, when it was used in navigation in particular formula is a leavage rate way of computing distances between two points on the surface of a sphere using the latitude and longitude of the two points. The haversine formula is a re-formulation of the spherical law of cosines, but the formulation in terms of haversines is more useful for small angles and distances. (On the other hand, the haversine formula does not do a very good job with angles that are close to 90 degrees, but the spherical law of cosines handles those well.) The haversine formula could yield accurate results without requiring the computationally expensive operations of squares and square roots. As recently as 1984, the amateur astronomy magazine Sky & Telescope was singing the praises of the haversine formula, which is not only useful for terrestrial navigation but also for celestial calculations. For more on the haversine formula and computing distances on a sphere, check out this archived copy of a census bureau page or this Ask Dr. Math article.

I don't have much information about the history of the other trig functions on the list. All of them could make computations more accurate near certain angles, but I don't know which ones were commonly used and which ones were named\* analogously to other functions but rarely actually used. I'm curious about this, if anyone knows more about the subject.