

ZMATH 2005e.02389

Fung, David; Ligh, Steve

Trigonometric representation of $[x]$.

Bogacki, Przemyslaw (ed.), Proceedings of the 7th annual international conference on technology in collegiate mathematics, ICTCM 7, Orlando, FL, USA, November 17–20, 1994. Norfolk, VA: Old Dominion University, Dept. of Mathematics and Statistics (ISBN 0-201-87020-7). Electronic paper (1994).

In the software DERIVE (version 2.07), the greatest integer function, $[x]$, when simplified, is given as $[x] = \arctan(\cot(\pi x))/\pi + x - 1/2$. The above equality can be proved by means of properties of trigonometric functions. Using other inverse trigonometric functions, we obtain several forms for $[x]$ as well as other step-like functions. (authors' abstract) (The paper is available under <http://archives.math.utk.edu/ICTCM/abs/7-FB17.html>)

Classification: I25 R25

Keywords: greatest integer function; applications of mathematics to mathematics; trigonometric functions; proofs; computer algebra