

Re: Sin Cos Tan, why not Sin Sec Tan?

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"Bill" <bill.thomson@tka.co.za> wrote in message
news:4b1e845e.0407160003.5d2229ca@posting.google.com...
> *jdolan@math-cl-n03.math.ucr.edu (James Dolan) wrote in message
news:<cd716d\$sjj\$1@glue.ucr.edu>...*
> > *in article <nomjc.1663\$K53.873@news-server.bigpond.net.au>,
> > cassandra thompson <cass.harley@bigpond.com> wrote:*
> >
> > *|I am learning trigonometry in preperation for actually teaching it.
> > |I am enjoying it, and would like to think I am getting a good
> > |understanding, however I am unsure about hte following.
> > |*
> > *|When talking about highschool level trigonometry we often use
> > |'SOHCAHTOA' as a way to remember that:
> > |Sin@ = O/H
> > |Cos@ = A/H
> > |Tan@ = O/A
> > |*
> > *|Further on we learn that 3 other functions exist that are the inversion
> > |of the first three
> > |*
> > *|CSC@ = H/O
> > |SEC@ = H/A
> > |COT@ = A/O
> > |*
> > *|So that Sin@ = 1/CSC@
> > | Cos@ = 1/SEC@
> > | Tan@ = 1/COT@
> > |*
> > *|My question is why is the cofunction of Sin, ie Cosine placed in the
> > |first three that are learnt. Wouldn't it make more sense to group them
as*
> > |
> > *|Sin@ = O/H
> > |Sec@ = H/A
> > |Tan@ = O/A
> > |*

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- > > /Then introduce the cofunctions
- > > /Cos@ = A/H
- > > /CSC@ = H/O
- > > /Cot@ = A/O
- > > /
- > > /This seems alot more clear to me. Is there some mathematical reason that
- > > /I am missing?
- > >
- > >
- > > the name "trigonometry" suggests that the subject is all about
- > > triangles, but that's very misleading; what trigonometry secretly
- > > _really_ is is the study of the points on the unit circle. (the right
- > > triangles that show up are just auxiliary devices used to highlight
- > > the points on the unit circle.) from this point of view it's pretty
- > > clear why cosine and sine are the crucial variables; they're the x and
- > > y coordinates of the point on the unit circle.
- > >
- > > so in fact besides not bothering with secant and cosecant and
- > > cotangent, it's probably better not to bother with tangent either.
- > > and cosine should generally come before sine, of course, since x comes
- > > before y after all.
- > >
- > > of course this tends to reduce trigonometry to about a five-minute
- > > lesson, but that's probably about what it's worth.
- >
- > Your sine and cos description is very succinctly put.
- >
- > But I have always wondered about Tan – why was this not defined as a
- > tangential intersect of x and y (a tangent to the unitary circle at 45
- > degree would intersect x and y at 1.414 (or sqrt2 whichever you
- > prefer))?

What is the y intersect of the tangent to the unit circle when x = 1? What is the x intersect of the tangent to the unit circle when y = 1? What would be the benefit of your idea?

> Would this not have been more logical?

Why "more logical"?

- > OK so we would have to have two
- > definitions of Tan – say a sinTan and a cosTan – the values of these
- > 'Tans' will be the reciprocal of their sin and cos counterparts.
- >
- > Kind of looking at x and y inside the circle (sin and cos) compared to
- > looking outside the circle (sinTan and cosTan). Just think of all the
- > nice formula fiddling that can take place.
- >
- > Bill