
education
to the universe knowledge columns

Reintroducing:
secant and tangent

## The geometric definitions

Why do secant and tangent always show up together in trigonometry and calculus? To start to see why, let's go back to the geometry. Recall that a tangent line touches one point on a circle at a right angle and a secant line dissects a circle.

Now, let $\sec \theta$ be the length of the line segment from the origin to the tangent line and let $\tan \theta$ be the length of the line segment from the point of tangency to the secant line.

Notice that for $\theta=90^{\circ}$, both of these measures approach infinity.

## the h-bar Palladium

## a Math + Science Newsletter

all the news that's fit to fprintf

In response to your requests for a summer program for older middle school and early high school students, we are very pleased to announce that we will be hosting such a program at the Throop Church in Pasadena!

Our staff includes MIT and Caltech grads excited to offer original courses, such as:

## h-bar Summer Academy!

Sign up here:
HbarTutoring.com/Academy
Session I: July 6 - July 23
Session 2: July 27 - August 13
Monday - Thursday 9am-5pm

| Botany | Philosophies |  |
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what is the equivalent resistance if $x=2$ ?


Throop Unitarian Universalist Church
300 S Los Robles Ave, Pasadena, CA 91101

Also, use the CAH in SOH-CAH-TOA to understand why $\sec \theta=1 / \cos \theta$ follows from this more basic geometric definition.

Apply the Pythagorean Theorem to see

$$
\sec ^{2} \theta=1+\tan ^{2} \theta
$$




If the equivalent resistance of the circuit is

$$
R_{e q}=R 3+\frac{1}{\frac{1}{R 1}+\frac{1}{R 2}}
$$

## Updates from h-bar

We've been busy! We are happy to announce some successful starts: Algebra Bootcamp classes and our First Physics webinar are now up and running.

We will soon release Sigma vs Python, a story based interactive iBook to supplement a more traditional Algebra 1 curriculum.

As always, please feel free to contact us:

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