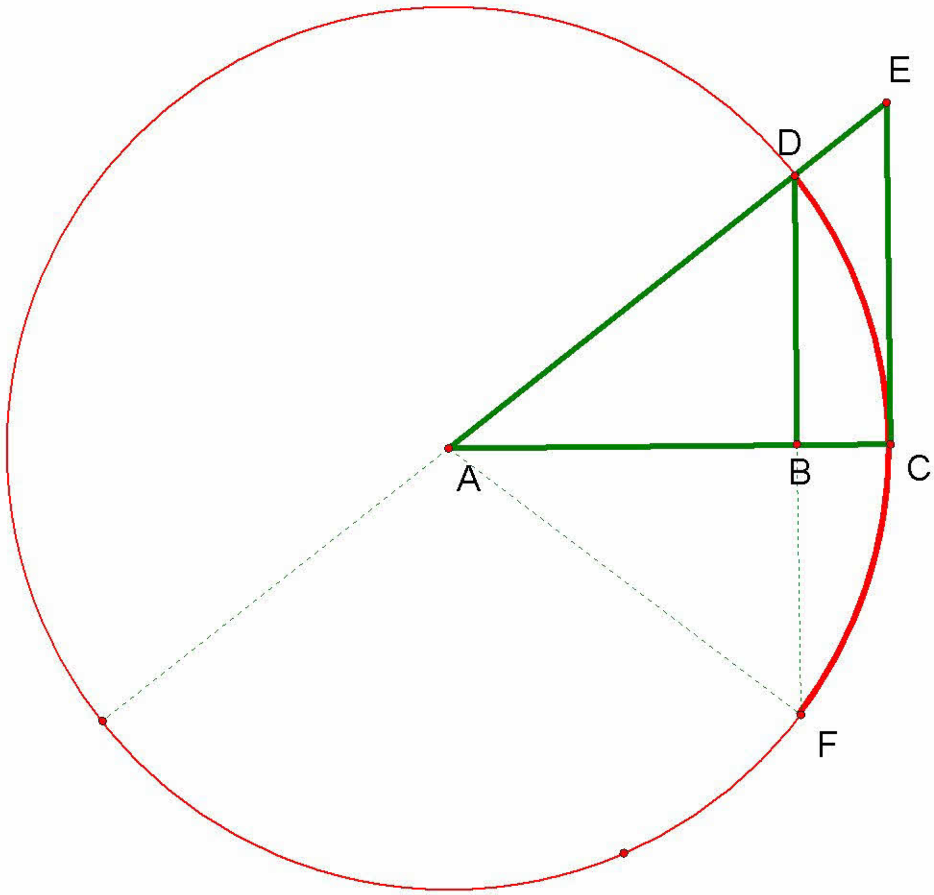
Exploring The Names Of The Trig Functions

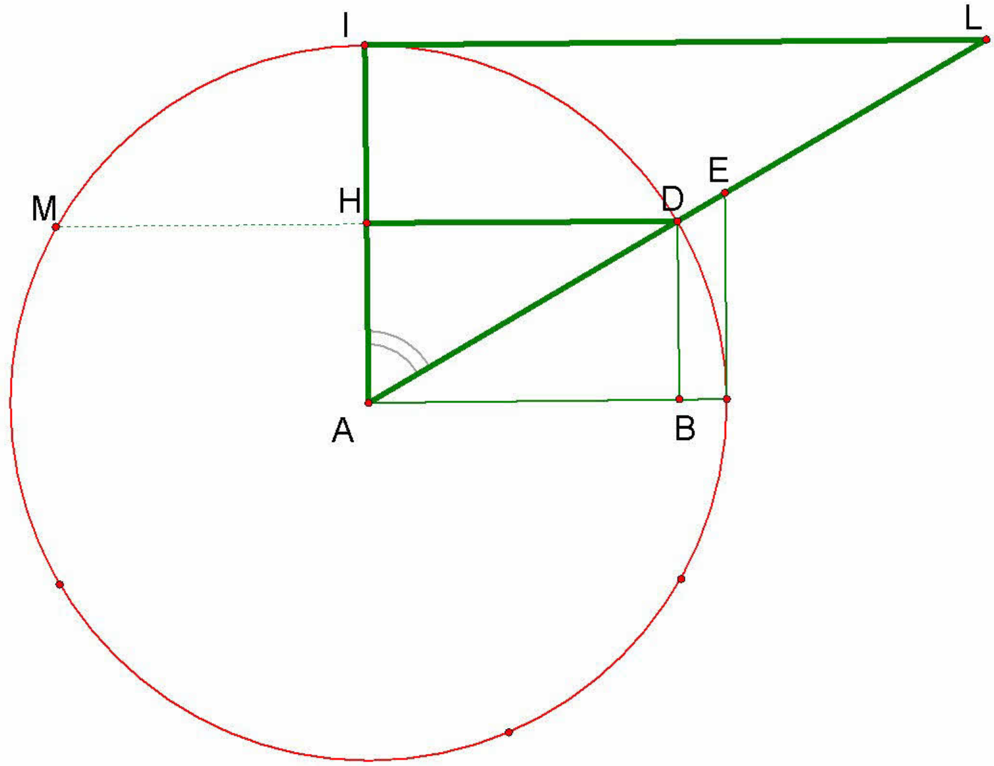


In this diagram $\angle A$ will refer to the angle $\angle EAC$
Circle A is a unit circle. (i.e. $AC = 1$)
$\Delta ABD \sim \Delta ACE$ so we know that all corresponding ratios are EQUAL.

Using ΔACE
The **tangent** of $\angle A$ is $\frac{EC}{AC} = \frac{EC}{1} = EC$. Notice that $\overline{EC}$ lies on a line that is tangent to circle A.

The **secant** of $\angle A$ is $\frac{EA}{AC} = \frac{EA}{1} = EA$. Notice that $\overline{EA}$ lies on a line that is a secant of circle A.

Finally
Using ΔABD
The **sine** of $\angle A$ is $\frac{BD}{AD} = \frac{BD}{1} = BD$. $\overline{BD}$ lies on segment $\overline{BF}$ which forms a BOW shape with arc $\widehat{DCF}$.



Now consider the same diagram with all the same constructions, but based on $\angle IAL$ which is the COMPLEMENT of the original $\angle A$.

The COSINE of $\angle EAC$ is $\frac{HA}{AD} = HA$ which is congruent to $\frac{BD}{AD} = BD$ which is the SINE of the original $\angle A$.

You can see that the COSING of the CO-plement of $\angle A$ is equal to the SINE of $\angle A$.

You can do the same for cotangent and cosecant.

In other words.
The CO-function of the CO-mplement of an angle is equal to the FUNCTION of the angle.