

Using your calculators: First let's make sure that you are in the proper mode. Calculators can be in three modes for trigonometry: degree (DEG), radians (RAD) and gradians (GRAD). Look at the display on your calculator. What does it say? We are currently using degrees, therefore make sure there is a D or a DEG written on the display. If not, find a button that reads DRG and push it until you get Degrees. Otherwise, you may have to go into your mode or settings to change it.

Test: Find the $\cos(23.93^\circ)$:

Answer in DEG mode: 0.914042

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When given the angle, simply type in the angle into the trigonometric operator. You are finding the RATIO!

Examples:

$$\sin(23.3^\circ) =$$

$$\cos(12.9^\circ) =$$

$$\tan(81.6^\circ) =$$

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Solutions:

$$\sin(23.3^\circ) = 0.395546$$

$$\cos(12.9^\circ) = 0.974761$$

$$\tan(81.6^\circ) = 6.77199$$

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When given the ratio, take the inverse function of the trigonometric operator. You are finding the **ANGLE!**

Examples:

$$\sin \theta = 0.5632$$

$$\cos \theta = 0.1298$$

$$\tan \theta = 2.1334$$

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Solutions:

$$\sin \theta = 0.5632$$

$$\theta = \sin^{-1}(0.5632)$$

$$\theta = 34.3^\circ$$

$$\cos \theta = 0.1298$$

$$\theta = \cos^{-1}(0.1298)$$

$$\theta = 82.5^\circ$$

$$\tan \theta = (2.1334)$$

$$\theta = \tan^{-1}(2.1334)$$

$$\theta = 64.9^\circ$$

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When given the angle for a reciprocal function, simply convert the reciprocal function into its reciprocal function and type in the angle. You are finding the **RATIO!**

Examples:

$$\csc(23.3^\circ) =$$

$$\sec(12.9^\circ) =$$

$$\cot(81.6^\circ) =$$

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Solutions:

$$\csc(23.3^\circ) = 1/\sin(23.3^\circ)$$

$$\csc(23.3^\circ) = 1/0.395546$$

$$\csc(23.3^\circ) = 2.52815$$

$$\sec(12.9^\circ) = 1/\cos(12.9^\circ)$$

$$\sec(12.9^\circ) = 1/0.9747611$$

$$\sec(12.9^\circ) = 1.0258923$$

$$\cot(81.6^\circ) = 1/\tan(81.6^\circ)$$

$$\cot(81.6^\circ) = 1/6.77199$$

$$\cot(81.6^\circ) = 0.147667$$

Feb 6-9:07 AM

When given the ratio of an inverse trigonometric function, first convert to the reciprocal and then, take the inverse function of the trigonometric operator. You are again finding the ANGLE!

Examples:

$$\csc \theta = 1.5632$$

$$\sec \theta = 1.1298$$

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Solutions:

$$\csc \theta = 1.5632$$

$$\sin \theta = 1/\csc \theta$$

$$\sin \theta = 1/1.5632$$

$$\theta = \sin^{-1}(1/1.5632)$$

$$\theta = 39.77^\circ$$

$$\sec \theta = 1.1298$$

$$\cos \theta = 1/\sec \theta$$

$$\cos \theta = 1/1.1298$$

$$\theta = \cos^{-1}(1/1.1298)$$

$$\theta = 27.73^\circ$$

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Example: Given $\sec \theta = 1.1298$, find $\tan \theta$.

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Solution: Given $\sec \theta = 1.1298$, find $\tan \theta$.

Find θ first:

$$\sec \theta = 1.1298$$

$$\cos \theta = 1/\sec \theta$$

$$\cos \theta = 1/1.1298$$

$$\theta = \cos^{-1}(0.885112)$$

$$\theta = 27.73^\circ$$

Now plug θ into $\tan \theta$.

$$\tan \theta = \tan(27.73^\circ)$$

$$\tan(27.73^\circ) = 0.52568$$

Feb 1-10:15 AM

When a rocket is launched, its horizontal velocity v_x , is related to the velocity v with which it is fired by the equation $v_x = v \cos \theta$. Here, θ is the angle between the horizontal and the direction in which it is fired. Find v_x if $v = 1250\text{m/s}$ and $\theta = 36.0^\circ$.

Feb 10-11:21 AM

