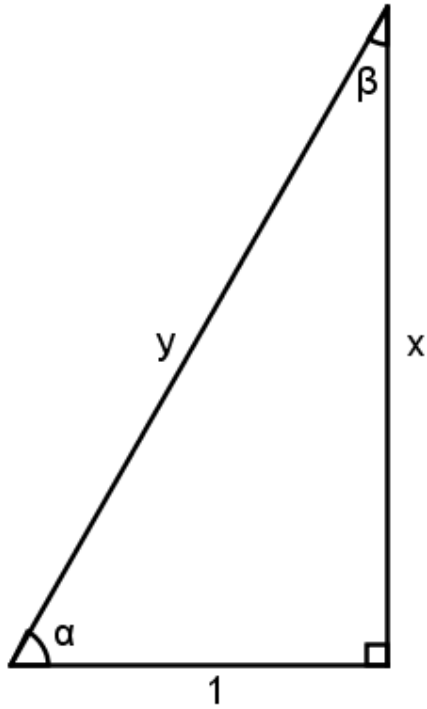


### Broken reciprocal key.

The  $1/x$  key on my calculator is broken.

How can I use the trigonometry buttons  $\sin, \cos, \tan, \sin^{-1}, \cos^{-1}, \tan^{-1}$  to calculate reciprocals?



We use the facts  $\sin \alpha = \cos \beta$  and  $\tan \beta = \frac{1}{\tan \alpha}$

$$\tan \cos^{-1} \sin \tan^{-1} x = \tan \cos^{-1} \sin \alpha = \tan \cos^{-1} \frac{x}{y} = \tan \beta = \frac{1}{x}$$

You might like to think why the following isn't quite right.

$$\tan \sin^{-1} \cos \tan^{-1} x = \tan \sin^{-1} \cos \alpha = \tan \sin^{-1} \frac{1}{y} = \tan \beta = \frac{1}{x}$$