

Use the three representations to prove each property.

Make a note whether it was easy, difficult or impossible to prove.

There is room at the bottom if you think of any other trig properties to check.

Property	Triangles	Power Series	$e$ and $i$
$\cos(x)^2 + \sin(x)^2 = 1$			
$\cos(0) = 1, \quad \sin(0) = 0$			
$\sin(a + b) = \sin(a) \cos(b) + \cos(a) \sin(b)$			
$\cos(2x) = 2\cos^2(x) - 1$			
$\cos(x + \pi) = -\cos(x), \quad \sin(x + \pi) = -\sin(x)$			
$\frac{d}{dx}(\sin(x)) = \cos(x), \quad \frac{d}{dx}(\cos(x)) = -\sin(x)$			
$\cos\left(\frac{\pi}{2}\right) = 0, \quad \sin\left(\frac{\pi}{2}\right) = 1$			
$ \cos(x)  \leq 1, \quad  \sin(x)  \leq 1$			
$\sin(x) \approx x$ and $\cos(x) \approx 1 - \frac{x^2}{2}$ when $ x $ small.			