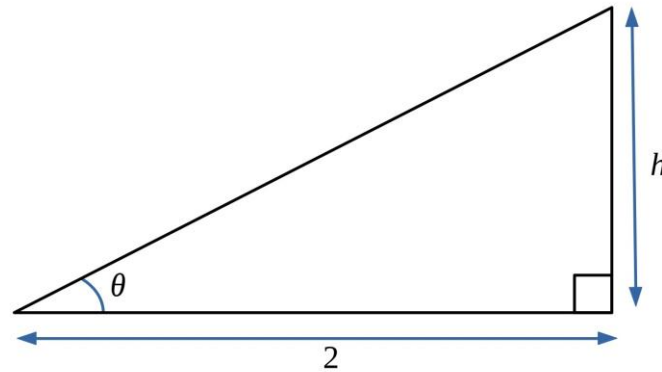


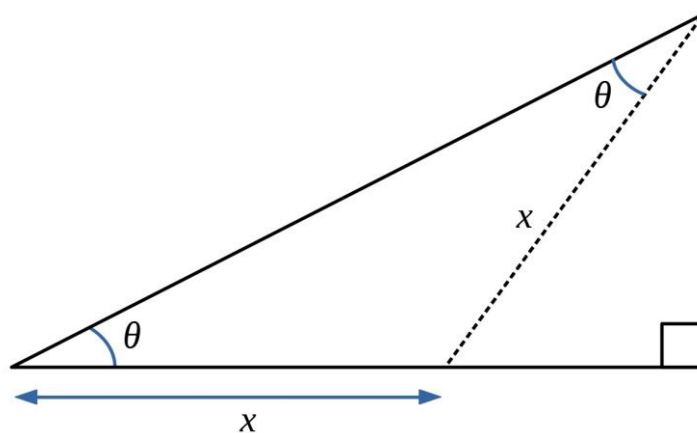


Consider a right angled triangle with an acute angle of  $\theta$ . Let the base of the triangle be of length 2.



Find the height of the triangle in terms of  $t$ , where  $t = \tan \theta$ .

Now imagine a line in the triangle which forms an isosceles triangle with two angles equal to  $\theta$ .



Use this diagram to prove the double angle formula, where  $t = \tan \theta$ :

$$\tan 2\theta = \frac{2t}{1-t^2}, \quad \sin 2\theta = \frac{2t}{1+t^2}, \quad \cos 2\theta = \frac{1-t^2}{1+t^2}$$