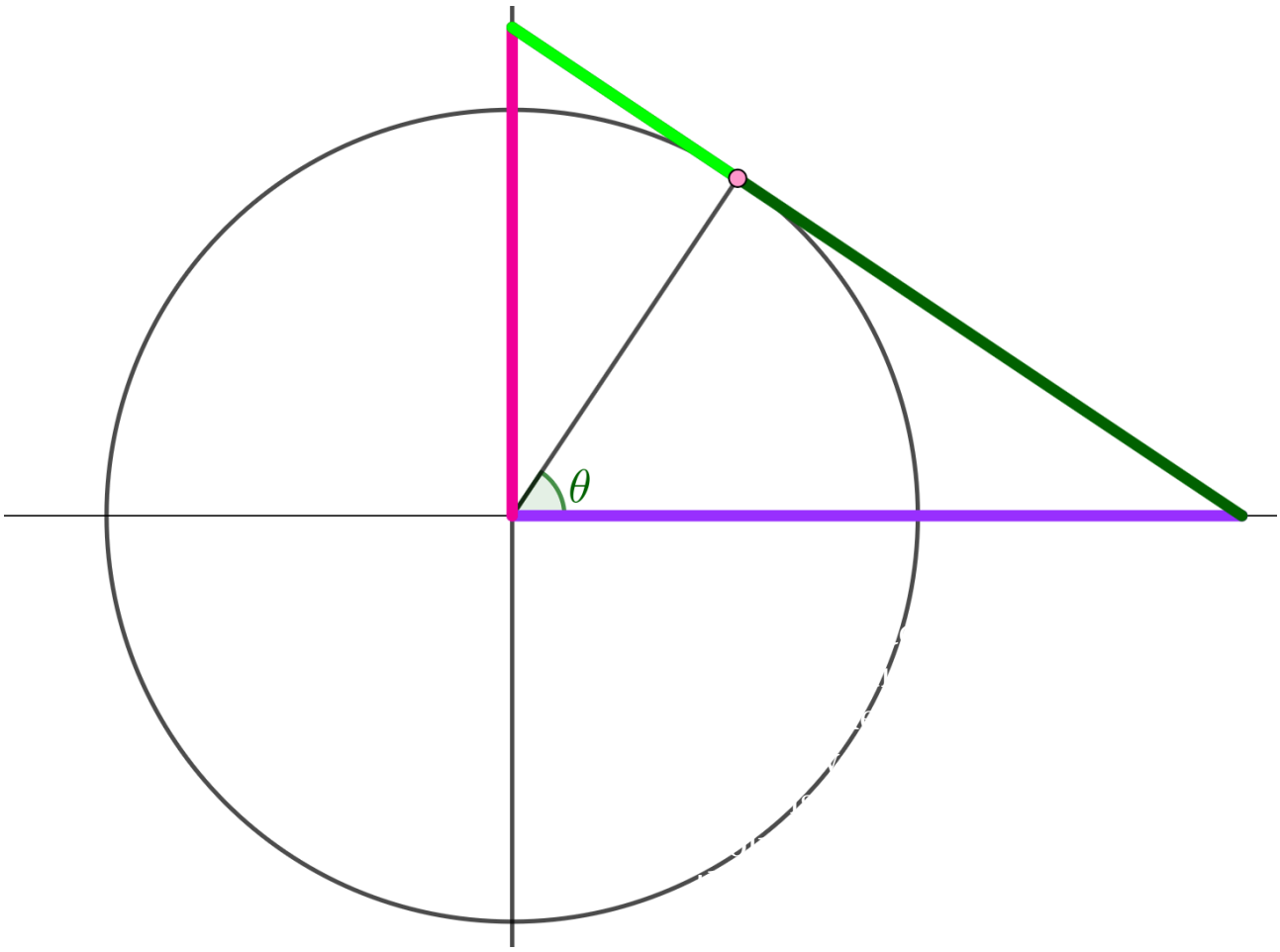
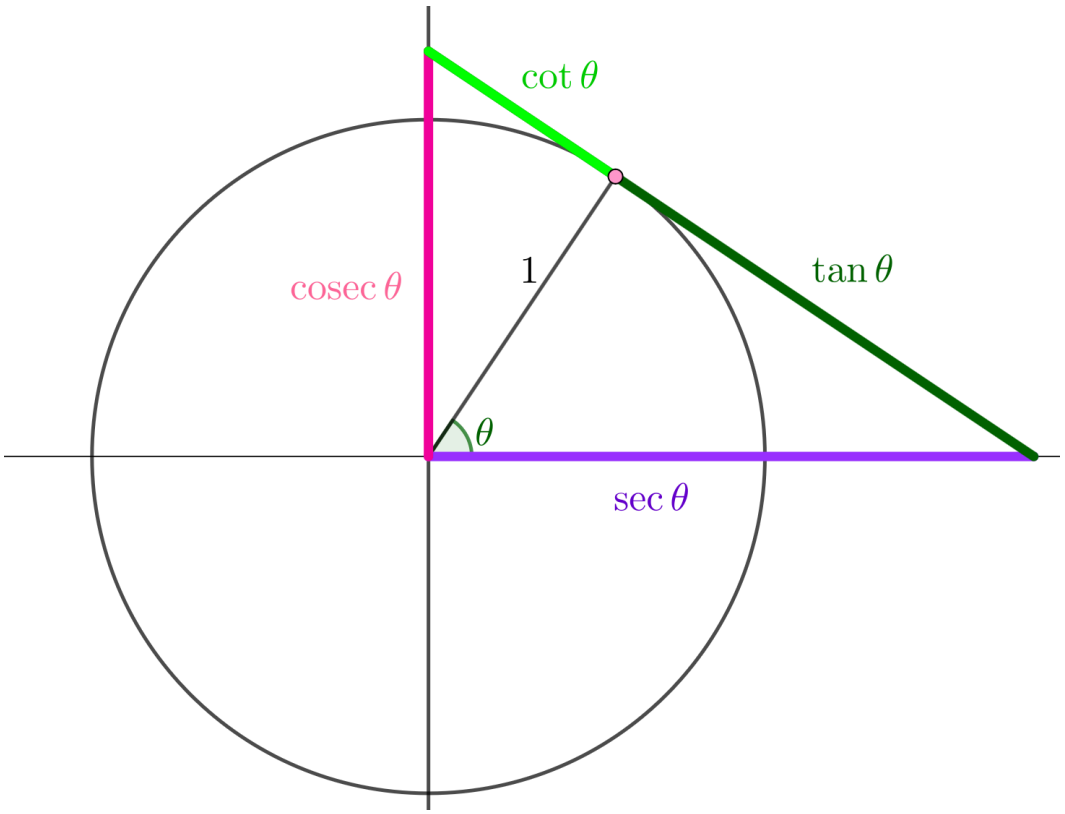
Reciprocal circular functions



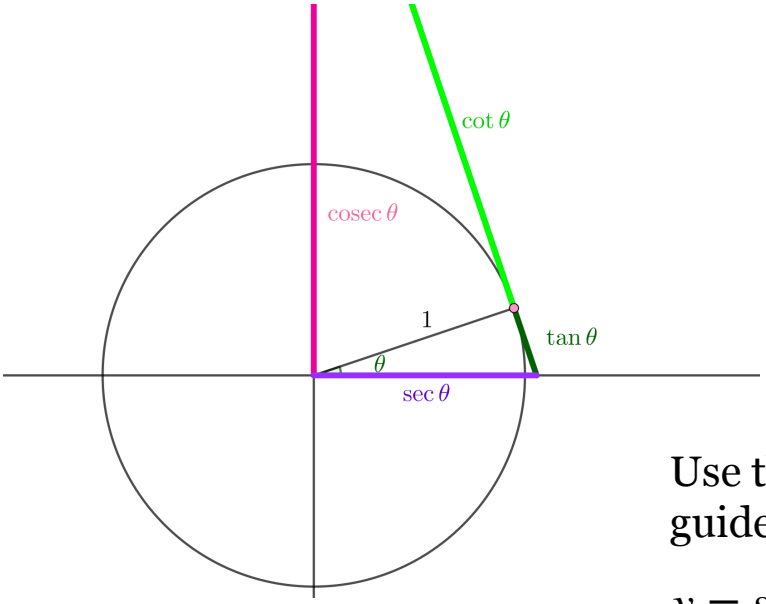
This is a circle radius 1.

What are the lengths of the highlighted segments?



There are three right-angled triangles here. What would Pythagoras say about each of them?

radical maths

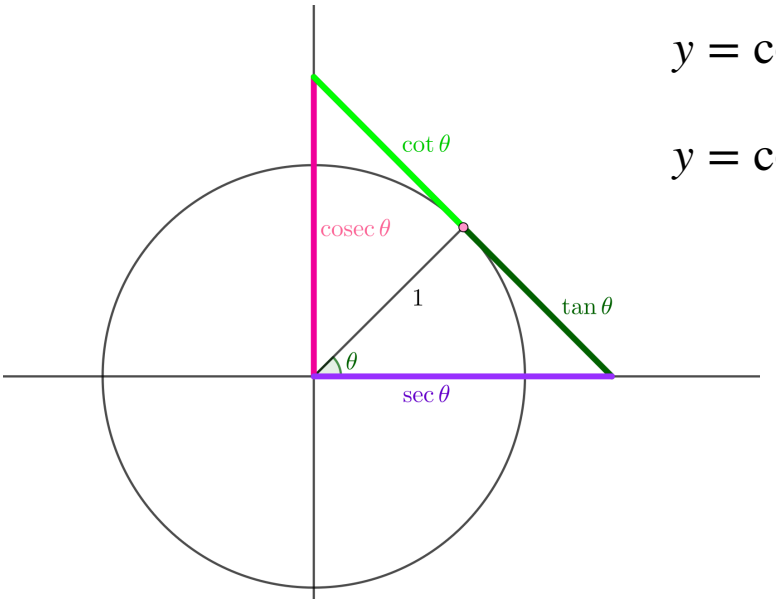


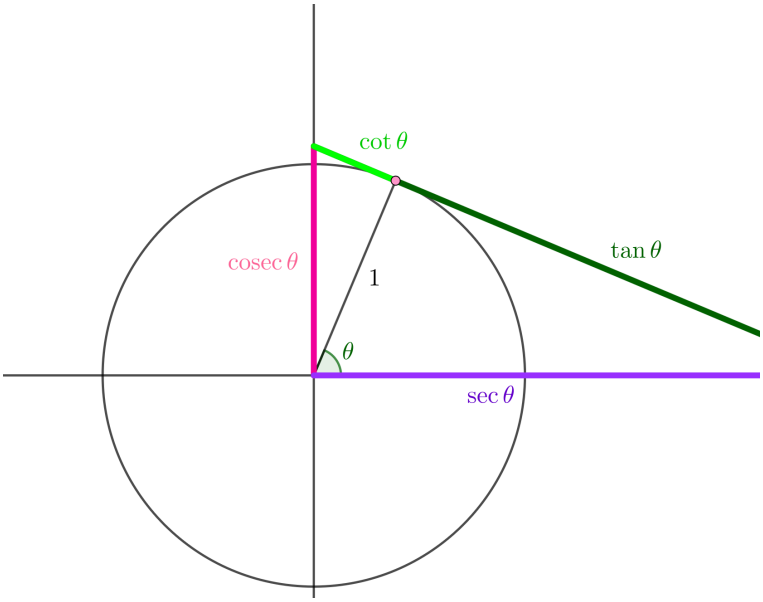
Use this sequence of diagrams as a guide to help you draw the graphs

$y = \sec x$

$y = \operatorname{cosec} x$

$y = \cot x$





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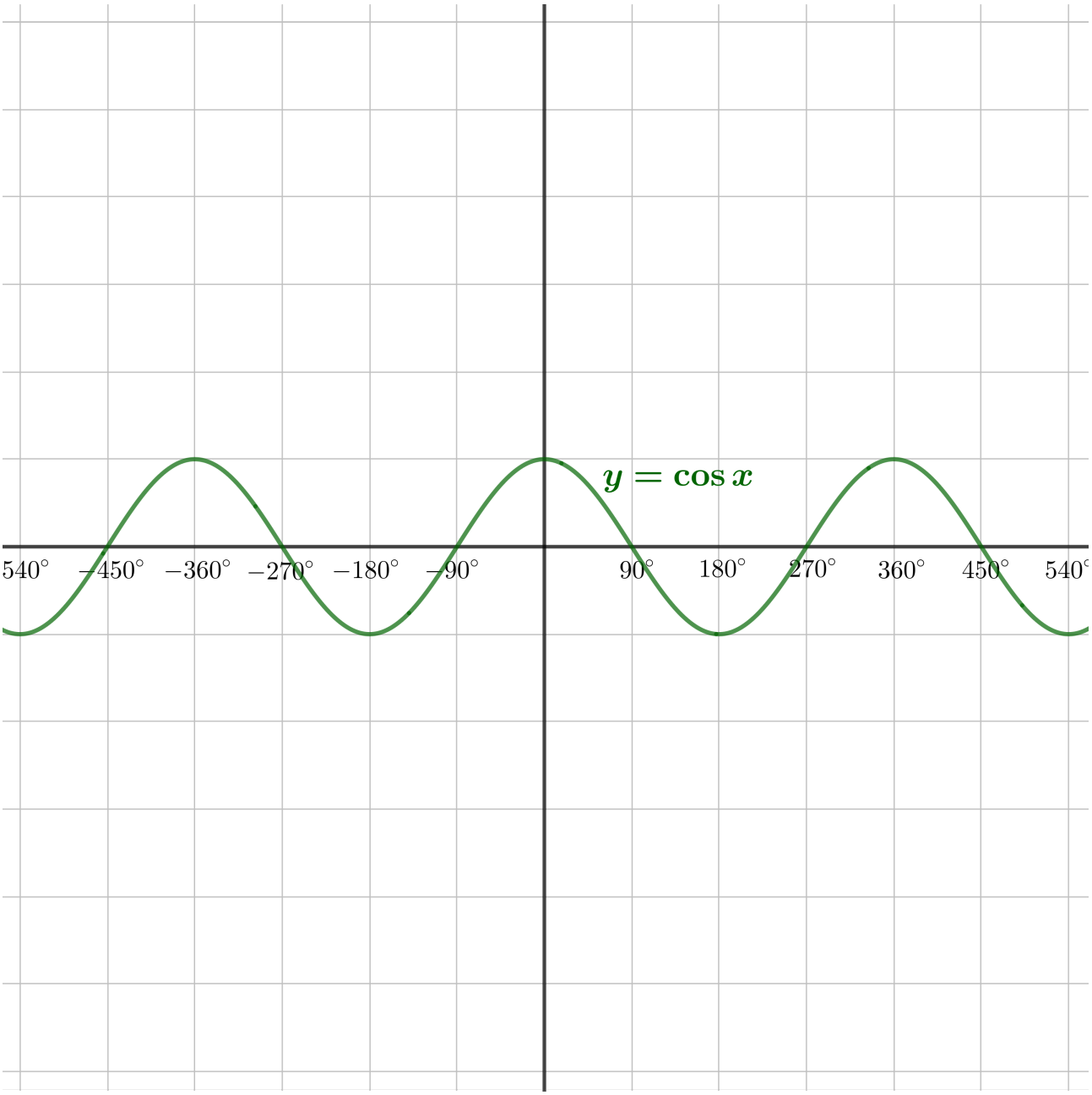

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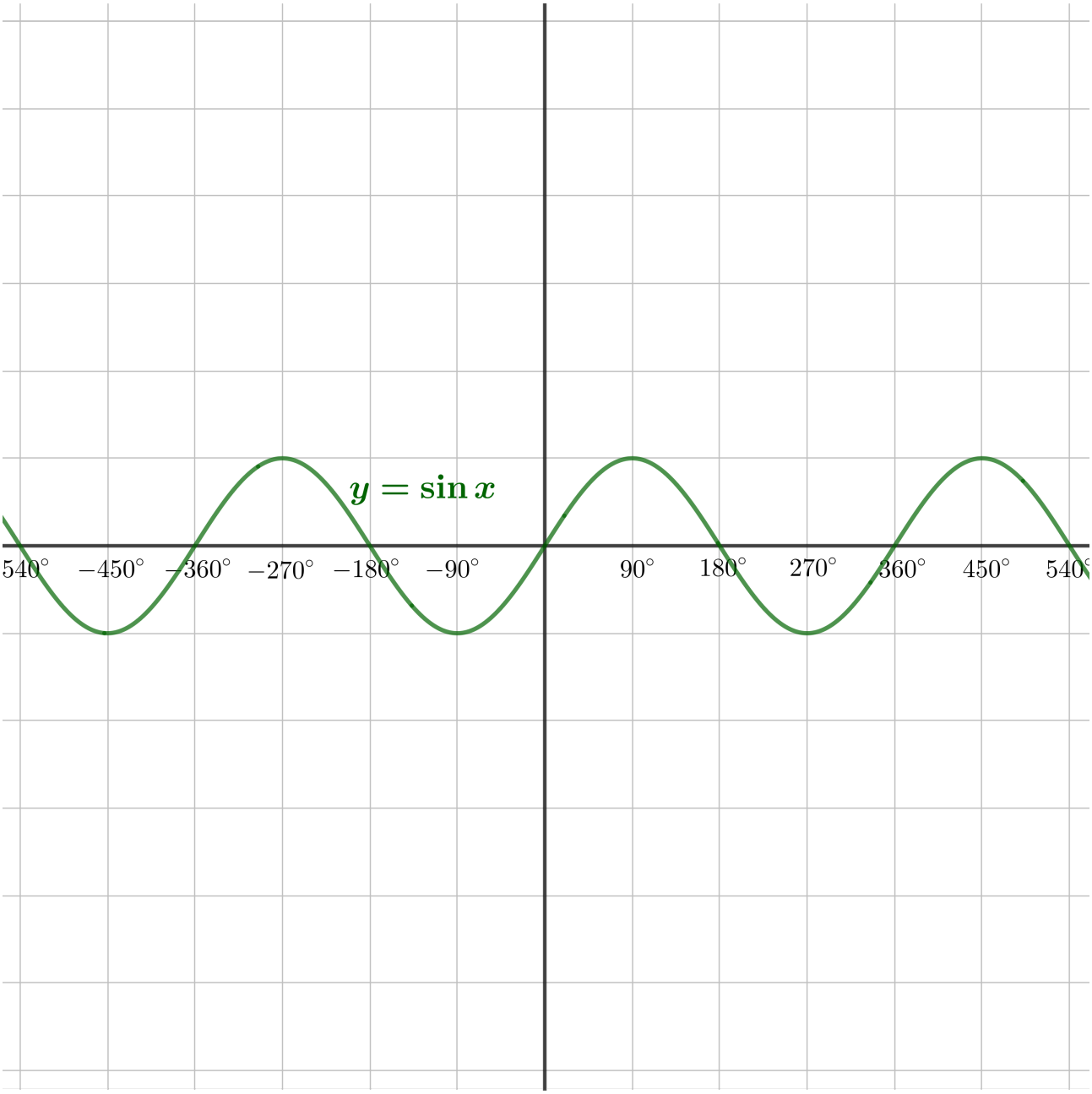

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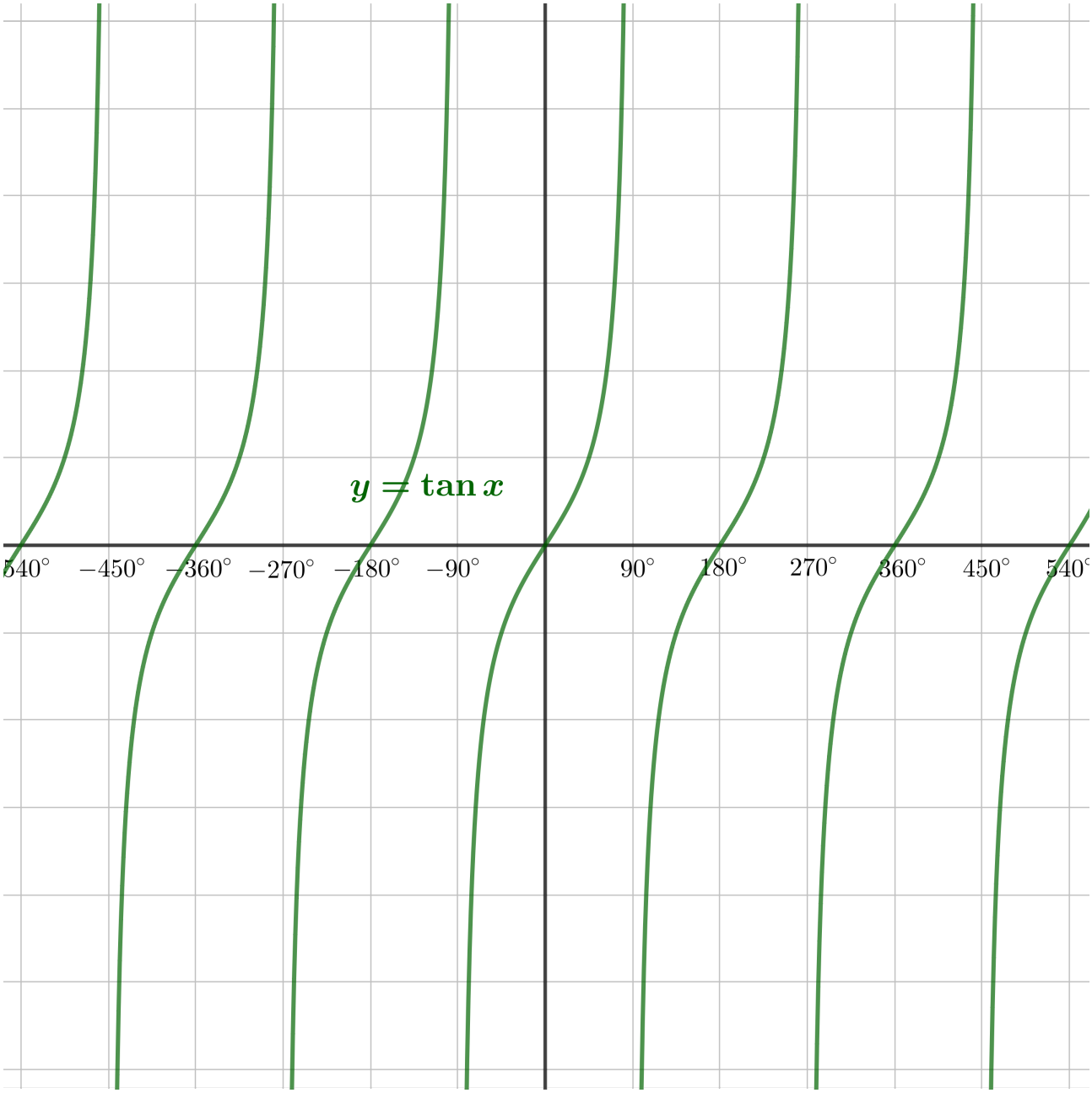

radical maths

Show that

$$\frac{1}{\cot\theta} + \cot\theta = \sec\theta\,\mathrm{cosec}\theta$$

whenever θ is not a multiple of 90°.