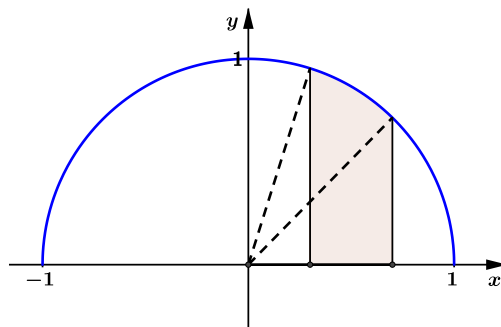# Circular slice

Problem

Use the substitution $x = \cos\theta$ to find

$$\int_a^b \sqrt{1 - x^2}\,dx$$

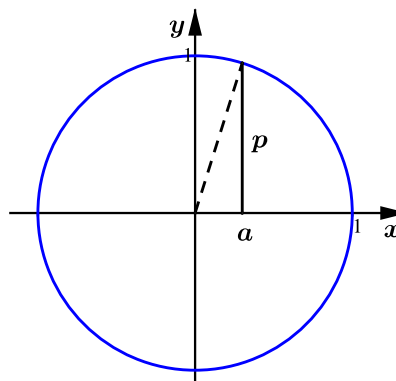How does your answer to $\int_a^b \sqrt{1 - x^2}\,dx$ relate to the following diagram?
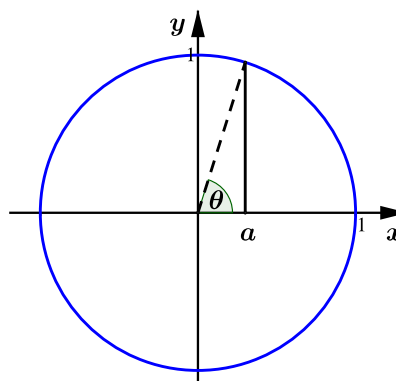
👉
   Look carefully at the original diagram. Do you know any information that you can add
   to the diagram? Are there lengths and areas that you can work out?

Further suggestions can be found by working through the questions below:

(a) Find p in terms of a.

(b) Find θ in terms of a.

(c) Find ϕ and the shaded area in
    terms of a and b.

   👉 It will be helpful to find the
       area of the sector using
       radians rather than degrees.

Last updated 11-Oct-16