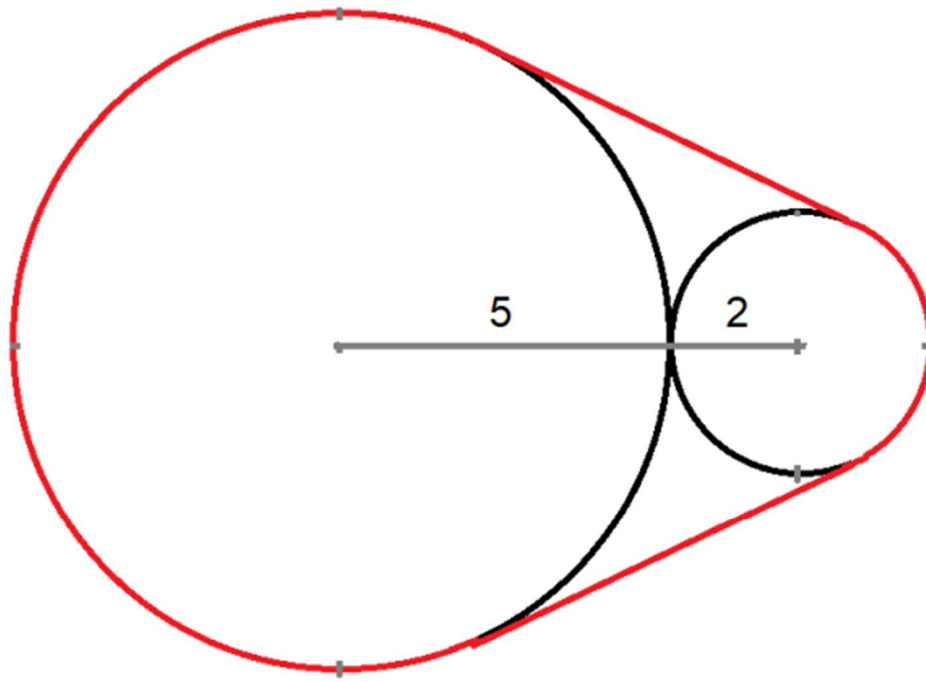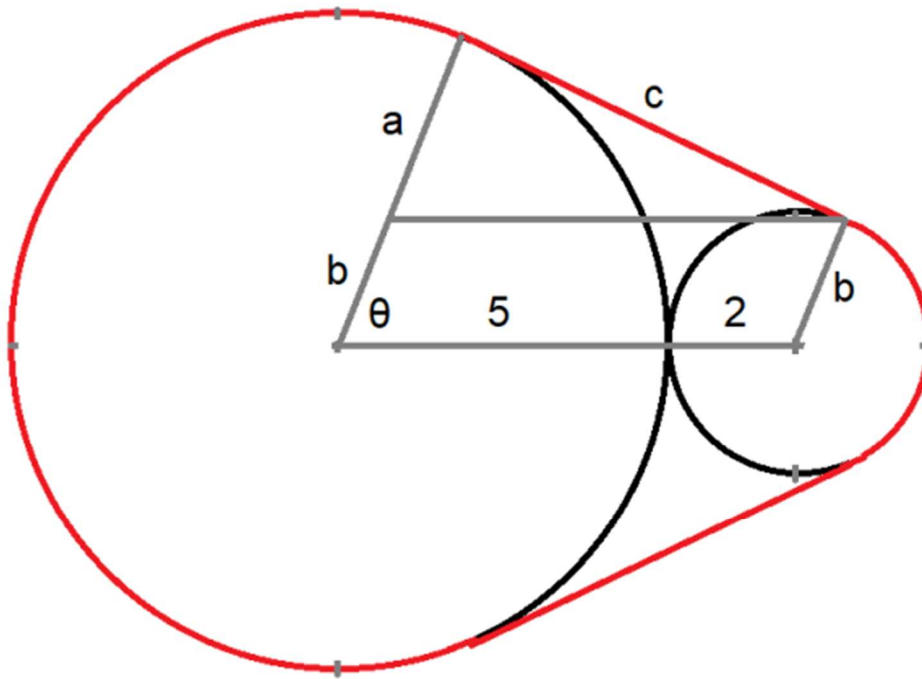Q:  A rubber band is stretched over two adjacent circles of diameters 2 and 5.
    What is the length of the stretched rubber band?



A:  $2*\sqrt{40} + 10*(\pi - \cos^{-1}(3/7)) =$~ 37.297725

Solution:

Let's use the following diagram:



We know a+b = 5 and b=2, thus a=3.

The Pythagorean formula tells us c = $\sqrt{40}$ =~ 6.324555.

Let's look at the triangle with sides of a, c and 7.

Cos(θ) = 3/7 =~ 1.127885.

The area the rubber band goes around the big circle is thus =5*2*(π- cos⁻¹(3/7)) =~ 20.137074.

The area the rubber band goes around the small circle is thus = 2*2*cos⁻¹(3/7)) =~ 4.511541.

Adding these parts we get a total length of $2*\sqrt{40} + 10*(\pi - \cos^{-1}(3/7))$ =~ 37.297725.