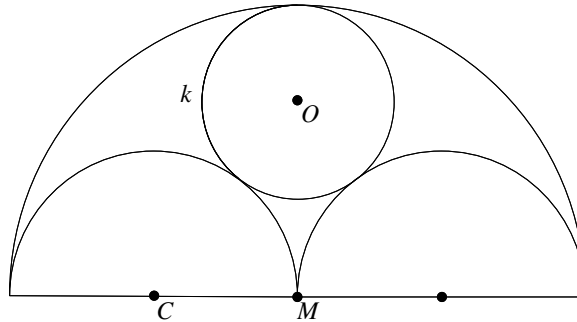


1. Find the radius r of circle k if $CM = a$.



Solution: Using the Pythagorean theorem for $\triangle OCM$ we have

$$\begin{aligned}CM^2 + MO^2 &= OC^2 \\a^2 + (2a - r)^2 &= (a + r)^2 \\a^2 + 4a^2 - 4ar + r^2 &= a^2 + 2ar + r^2 \\4a^2 &= 6ar \\\frac{2}{3}a &= r\end{aligned}$$