

Explanation

The proof is shown below.

Statement	Reason
$x^2 + y^2 = r^2$	Pythagorean theorem
$\frac{x^2}{r^2} + \frac{y^2}{r^2} = \frac{r^2}{r^2}$	divide both sides of the Pythagorean theorem by r^2
$\left(\frac{x}{r}\right)^2 + \left(\frac{y}{r}\right)^2 = 1$	power of a quotient property
$\cos^2(\theta) + \sin^2(\theta) = 1$	substitute $\cos(\theta)$ for $\frac{x}{r}$ and $\sin(\theta)$ for $\frac{y}{r}$