\[ (r \cos \theta)^2 - (r \sin \theta)^2 = 1 \]
\[ r^2 \cos^2 \theta - r^2 \sin^2 \theta = 1 \]
\[ r^2 (\cos^2 \theta - \sin^2 \theta) = 1 \]
\[ r^2 \cos (2\theta) = 1 \]
\[ r^2 = \frac{1}{\cos (2\theta)} \]
\[ r^2 = \sec (2\theta) \]

Note: Polar Equations have "r's", "\theta's" and numbers. But sometimes you can't solve for just "r." In this case the best you can do is \( r^2 \). But then, remember - the original eq. was not \( y = \) something. See what I mean!?