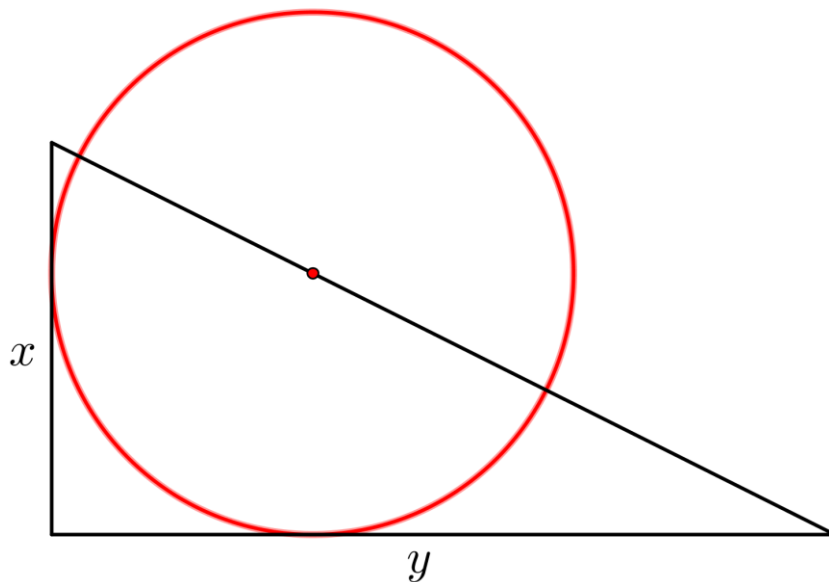A circle 'sits' on a right-angled triangle, touches two sides of the triangle and has its centre on the hypotenuse of the triangle.

The circle has radius r, and the triangle has sides of length x and y.

Show that $\dfrac{1}{r} = \dfrac{1}{x} + \dfrac{1}{y}$