Math Diversion Problem 809

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A clue is anything that doesn't happen
the way it oughtta happen.
— Harry Orwell,
TV show *Harry O*

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Source:  https://www.youtube.com/watch?v=TtbUbU8-BA0
Title: 98% Students FAILED to Solve this Math Problem
 Presenter: Lines & Logic
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1 Problem

In the figure below is depicted a circle of radius R, centered at point **0**. Use the given information to determine the radius.

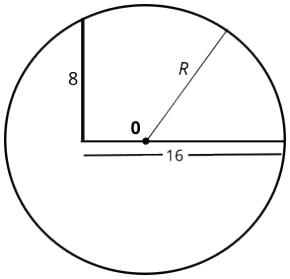

Figure 1. Should we use trig or just algebra?

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2 Solution

Well, I'm going to try the algebraic route to an answer.

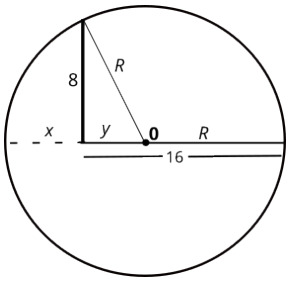

Figure 2. To the algebraic approach we'll use the Pythagorean Theorem.

Starting with the right triangle, we can write

$$R^2 = y^2 + 8^2 \,. \tag{1}$$

Then we adds to the a obvious relation

$$R + y = 16 \,. \tag{2}$$

Turns out that we won't need any relations involving x. All we need to do is to eliminate y between (1) and (2), to get

$$R^2 = (16 - R)^2 + 8^2 \,. \tag{3}$$

Solving this for R gives

$$R = 10 \,. \tag{4}$$