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Gooey Ducks and Naked Physicists

Part XLVI and ½
The Alien Thalean

D. and S. Birks
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Editing contributions by Daniel Birks

Abstract: An allegory of modern science.

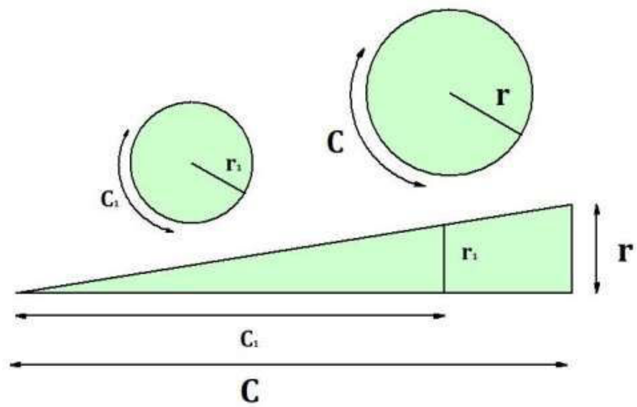
Part XLVI and ½

Wow! What a wild twist on trigonometry! A new algorithm for you and me!
Finding the area of a circle is the same as finding the area of a right triangle:

½ the circumference times the radius = ½ the base times the height

Yep, with the circumference and the radius as the base and height of a right triangle…
the circle is the equation for its own area! The area is right there–no math problem at all!

And talk about a new take on similarity! Circles similar to right triangles? Obviously, circles and triangles aren't the same shape (they're not similar *in that way*). But being constructed with the same lengths of radii and, ahem, "circumferii," these triangles and circles have the same areas, and sure'nuff…if I overlay the two similar triangles, I can see the corresponding lengths of the circles and the right triangles are proportional!



$$\frac{C}{r} = \frac{C_1}{r_1}, \quad or \quad \frac{C_1}{r_1} = \frac{C}{r}, \quad or \quad \frac{r_1}{C_1} = \frac{r}{C}, \quad or \quad \frac{r}{C} = \frac{r_1}{C_1}$$

Wow! Idiosyncratic similarity of different geometric shapes through proportionality? Crazy! What'll they think up next? This sure takes one giant step (and–if I might say–one giant leap) beyond pi! It doesn't matter whether I divide the circumference by the radius, or the radius by the circumference. *Es macht nichts*, Colonel Klink! Either way, I end up with the same proportionality equation for both the circles and the triangles:

$$(C_1)\,(r) = (C)\,(r_1)$$

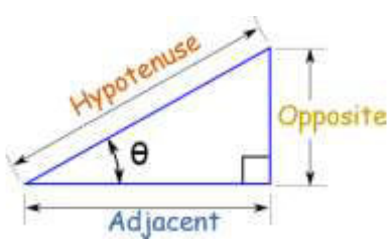
What a fun new application! Using the lengths of the circumference and radius of one circle (as a standard), I could choose the radius of any circle in the universe and calculate its circumference and area. And what makes it real easy: I can see the lengths of the circumferences and radii of all the circles as sides of similar right triangles!
So I guess what I have is Thales' intercept theorem (for similar triangles) applied to circles!
Ooh…"The Thalean Circle"! Sounds like the title of a sci-fi movie, coming soon to a theater near you!…*Deep space, shipwrecked, stranded in a hostile world, the naked physicist comes face-to-face with*–(dramatic pause for effect)–"*The Alien Thalean*"!

(On the edge of your seat? Good. So the story?)…As I crawled out of the remnants of my shattered space pod, lashed by the wind-driven rains, a figure loomed close and emerged out of the semi-darkness. "Irkmaan!" the thing spat.
"You piece of Thalean slime," I cooly replied.
"Ne!" It pointed at me with its yellow finger. "Kos son va?"
"I don't speak Thalean, toad face. You speak Voutian or English?"

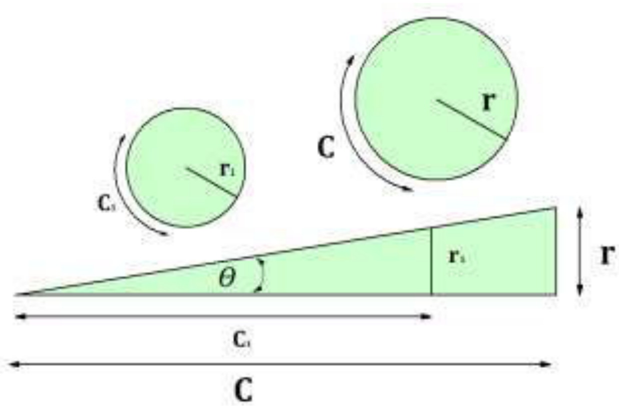
The Thalean delivered a very human-looking shrug, and then smiled, exposing the upper and lower mandibles, which looked almost human–except that instead of separate teeth, they were solid, shiny green. Then, the swarthy, reptilian-eyed, purple-bearded Thalean's three-fingered hands flexed. It slowly reached into its pouch and pulled out…could it be?
I realized immediately that even though we may not be from the same planet, we definitely were on the same page! I was standing face-to-face with a fellow mathman–just like me!
Maybe inter-species, inter-planetary communication and even peace are possible!
And the device–what looked like a protractor on a triangular slide rule–was exactly what I was just working on…the Thalean circle!

Ha, ha! Couldn't resist a little "Enemy Mine" flashback! And if you think that's far-out sci-fi, how about a little "Py-fi" or "Thi-Py"! Yeah: the Thalean circle meets the Pythagorean triangle!

Sure, now that it's been proven that the equation for finding the area of a circle and a right triangle are one and the same, I should be able to apply the Pythagorean theorem and trigonometric functions for right triangles to circles! How ridiculous is that?
For instance: $tangent\ (\theta) = opposite/adjacent$.



And looking at the similar right triangles created by the lengths of the circumferences and the radii of the similar circles, the ratio of the radius over the circumference would be the same as the tangent of angle θ:



$$tangent\ (\theta) = \frac{radius}{circumference} = \frac{r_1}{C_1} = \frac{r}{C}$$