NCEA Level 2 Mathematics (Homework)
2. Arcs and Sectors of Circles

Reading

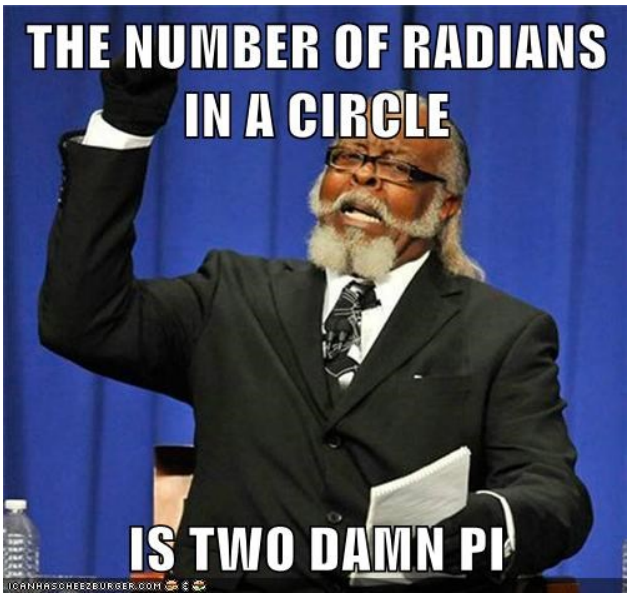
Go and watch...

https://www.youtube.com/watch?v=QncgmzH6yQU

What's it good for?

People use the geometry of circles for...

- Physics: physicists and engineers often want to model things that rotate, and proper definitions of rotational speed and acceleration require the use of the geometry of arc lengths and sector areas.
- Mathematics: the idea of a 'limiting process', where we take sums of things that we let become infinitesimally small, is a fundamental idea that underpins entire branches of mathematics and allows us to formally define the concepts of area and volume, and enables us to better understand things which are continuous.



Questions

1. A car tire has diameter 53 cm. A detector measures that a particular point on the tire tread rotates past 1061 times per second.
   (a) What speed is the car travelling at?
   (b) Is this setup practical and/or useful? Explain.
2. What is the radius of a circle such that the sector of area $\frac{\pi}{3}$ has arc length $\frac{\pi}{3}$?