

1145-VO-2581 **Tom Edgar** (edgartj@plu.edu) and **David Richeson*** (richesod@dickinson.edu). *Gregory's theorem for inscribed and circumscribed regular polygons.*

Archimedes famously used the perimeters of inscribed and circumscribed regular polygons to approximate the circumference of a circle and thus to obtain bounds for π . In 1667, James Gregory did the same, but for areas. Let I_k and C_k denote the areas of inscribed and circumscribed regular k -gons, respectively. Gregory proved that for all n , I_{2n} is the geometric mean of C_n and I_n , and C_{2n} is the harmonic mean of C_n and I_{2n} . In this talk we give a brief history of Gregory's work and we present a short proof of his theorem. (Received September 25, 2018)