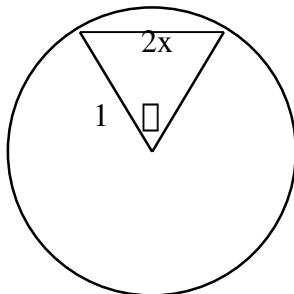


DOWLING COLLEGE
Mth 1022
Project II

Dr. Monteferrante



Consider the sector of a circle of radius 1 above. The central angle is θ radians, thus the area of the sector is half the central angle multiplied by the radius. Let $S(x)$ be the total area of the sector as a function of x (half the chord length). Let $T(x)$ be the total area of the isosceles triangle formed by the radii and the chord of length $2x$.

1. Make 4 sketches of the circle with the sector for $\theta = 0, \theta/3, \theta/2, \theta$.
2. Compute x in each case.
3. Find a formula for $S(x)$.
 - o It is easy to find this area as a function of θ , the trick is to find θ as a function of x , try the law of cosines.
4. Find a formula for $T(x)$.
 - o You will need an area formula that uses an angle.
5. Graph the 3 functions: $S(x)$, $T(x)$ and $S(x)/T(x)$ for $0 \leq x \leq 1$
6. Compute $\lim_{x \rightarrow 0} S(x)/T(x)$.
7. Explain why the results of questions 5 and 6 make sense geometrically.

GRADING RUBRIC

Project Component	Points
Cover page with members' names and signatures.	1
Journal of meeting dates and times along with what transpired.	1
Evaluation of the contributions, strengths and weaknesses of each member.	1
Mathematical solution	7