Wheels and Rosettes -- Hints

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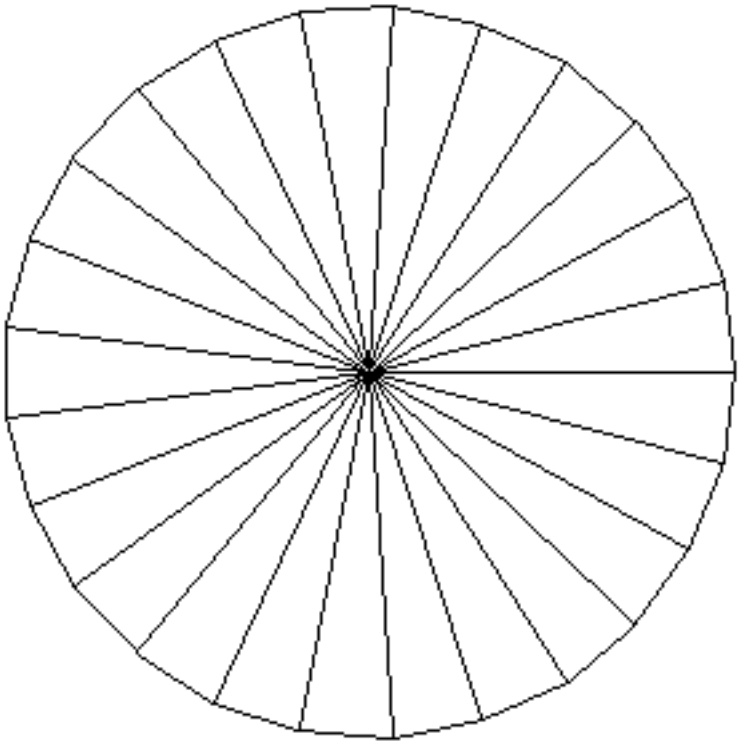
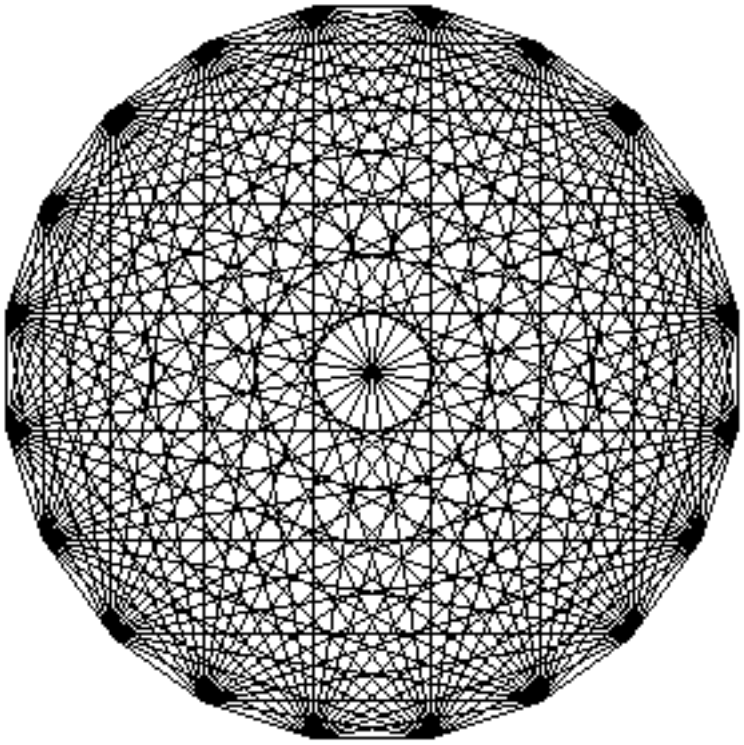
Wheels and Rosettes

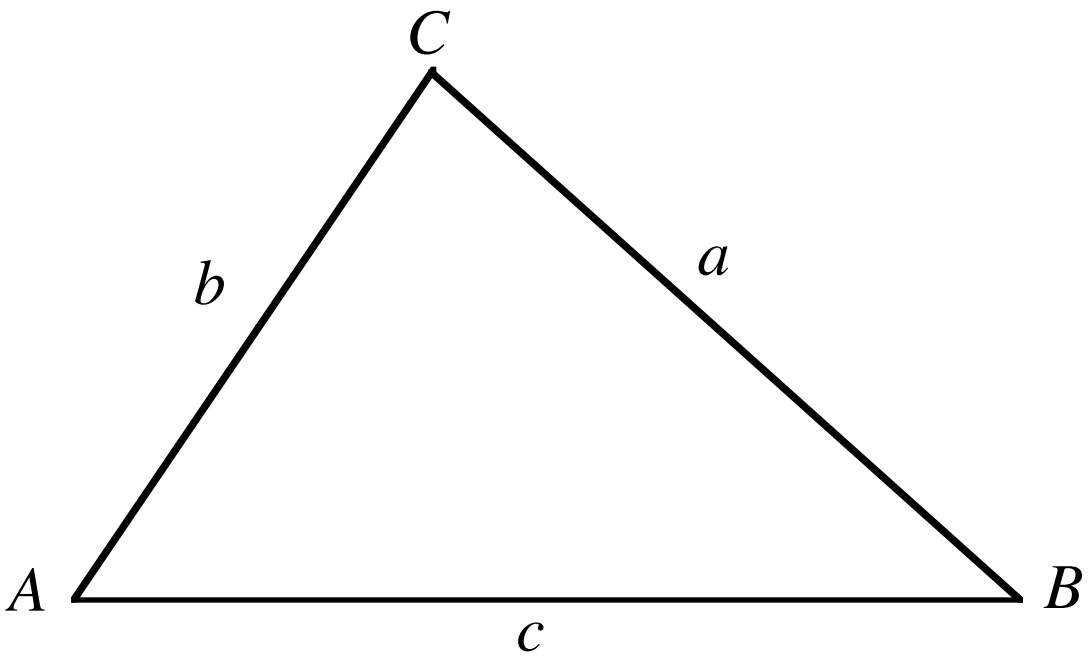


Wheel (25 vertices)



Rosette (20 vertices)

Law of Cosines

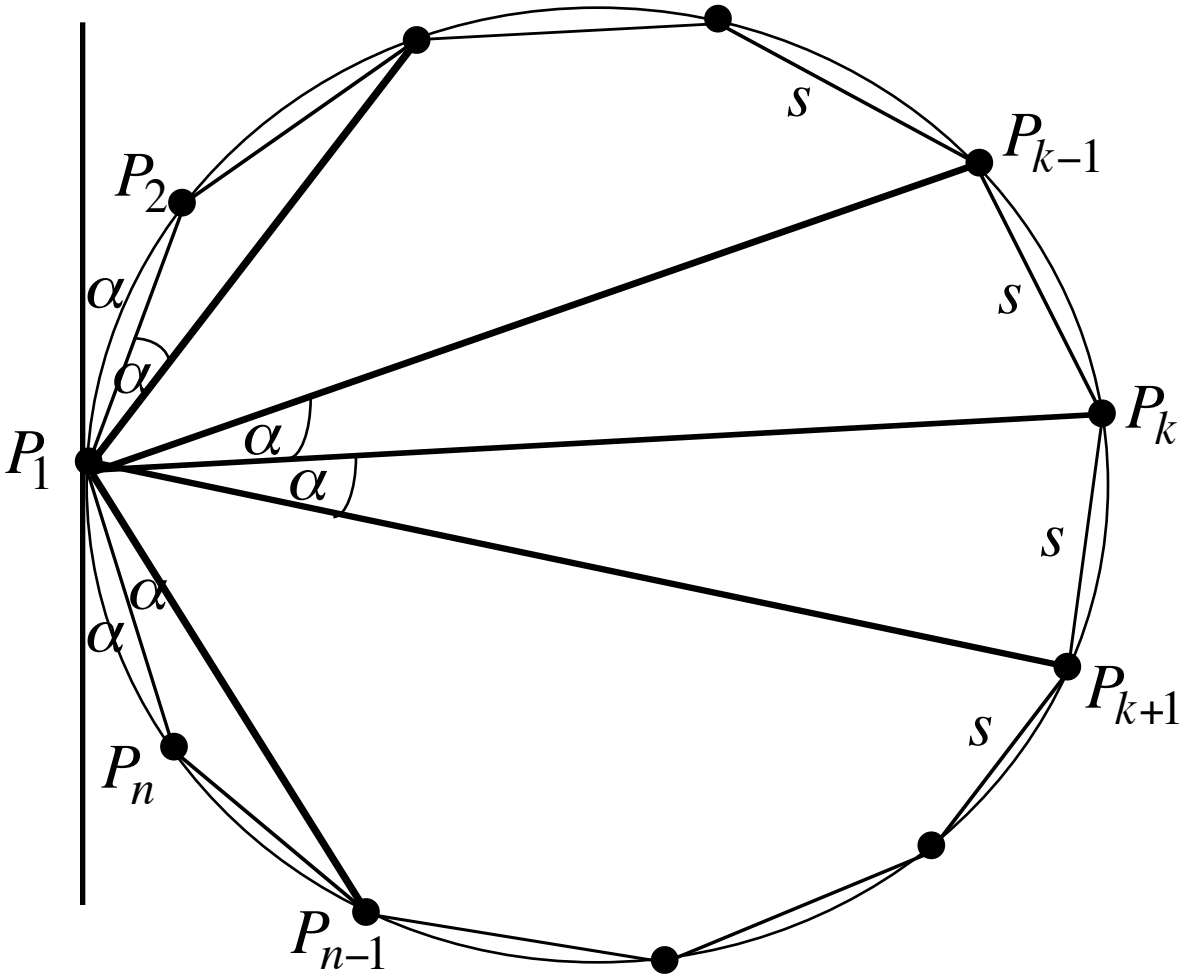


$$c^2 = a^2 + b^2 - 2\,a\,b\,Cos(C)$$

Half Angle Formulas

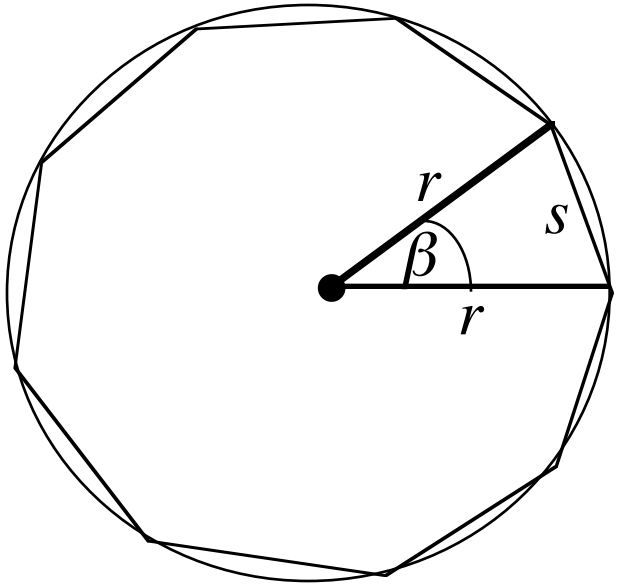
- $Cos^2 x + Sin^2 x = 1$
- $Cos^2 x - Sin^2 x = Cos(2x)$
  - $2\,Cos^2 x = 1 + Cos(2x) \Rightarrow Cos(x) = \sqrt{\frac{1 + Cos(2x)}{2}}$
  - $2\,Sin^2 x = 1 - Cos(2x) \Rightarrow Sin(x) = \sqrt{\frac{1 - Cos(2x)}{2}}$

Rosettes -- Angle



$$n\alpha = 180 \Rightarrow \alpha = 180 / n$$

Wheels and Rosettes -- Circumradius

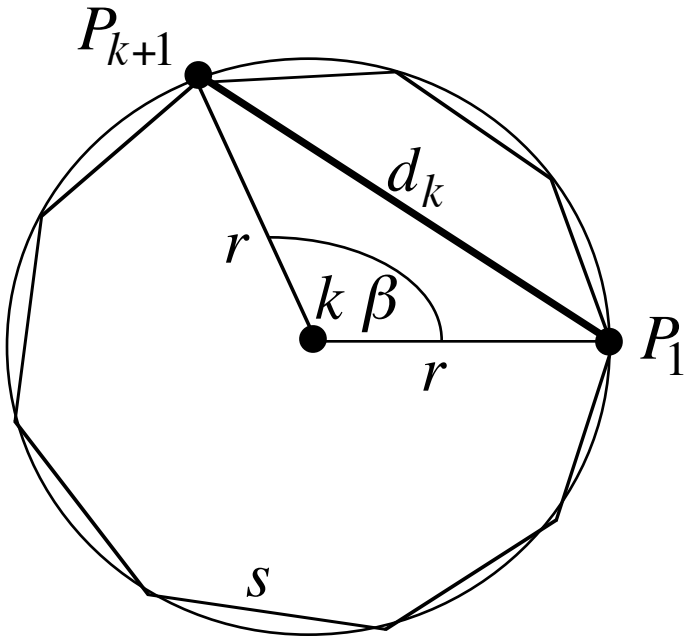


$$n\beta = 360 \Rightarrow \beta = 360 / n$$

n = number of sides

Solve for r Using the Law of Cosines for s and the Half Angle Formula

Rosettes -- Diagonals



$$n\beta = 360 \Rightarrow \beta = 360 / n$$

Solve for d_k Using the Law of Cosines and the Previously Computed Value for r.