Solution to Problem 127

Solving for angles in the triangles by the Law of Cosines,
- Angle B-A-D = 45°01'32.35"
- Angle B-D-A = 60°15'01.04"
- Angle A-B-D = 74°43'26.61"
- Angle C-A-D = 31°47'17.99"
- Angle C-D-A = 49°13'20.53"
- Angle A-C-D = 98°59'21.48"

Letting Point A be North = 0 and East = 0, Point D is North = 0, East = 300.000

By distance–distance intersection or by traversing,
- Point C is North = 121.16002, East = 195.50000 and
- Point B is North = 191.00429, East = 190.83333

BC^2 = (191.00429 - 121.16002)^2 + (195.50000 - 190.83333)^2
BC^2 = 4878.222052 + 21.777809 = 4899.99986
BC = 69.9999990, almost an integer too!

Solution to Problem 128

Let P be the radius point of the annulus.

The area of the annulus is \( \pi R^2 - \pi r^2 = \pi (R^2 - r^2) \)

PB = r and PC = R

BC^2 = PC^2 - PB^2 = R^2 - r^2 = radius of circle A-C.

The area of the circle AC is therefore \( \pi(R^2 - r^2) \), same as the annulus.

(The numerical values given are for people who like to draw and calculate.)