

3.21 Segment of a Circle

Radius of a circle: R

Arc length: s

Chord: a

Central angle (in radians): x

Central angle (in degrees): α

Height of the segment: h

Perimeter: L

Area: S

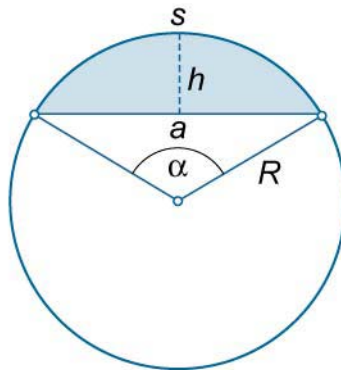


Figure 36.

$$271. \quad a = 2\sqrt{2hR - h^2}$$

$$272. \quad h = R - \frac{1}{2}\sqrt{4R^2 - a^2}, \quad h < R$$

$$273. \quad L = s + a$$

$$274. \quad S = \frac{1}{2}[sR - a(R - h)] = \frac{R^2}{2} \left(\frac{\alpha\pi}{180^\circ} - \sin \alpha \right) = \frac{R^2}{2} (x - \sin x),$$

$$S \approx \frac{2}{3}ha.$$