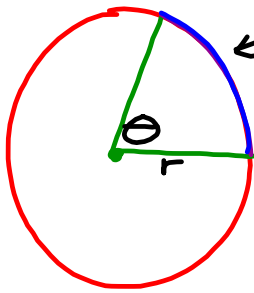


Section 7.2: Arc length, Angular & Linear Speed

Arc length =  $S = r\theta$  ← angle always in Radians



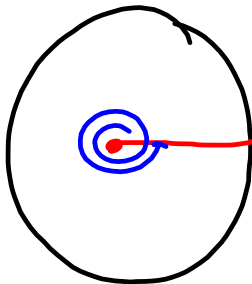
find  $S = r\theta$   
 $= 6\text{cm} \cdot \frac{5\pi}{4} = \frac{30\pi}{4}\text{cm}$   
 $= 7\frac{1}{2}\pi\text{cm}$   
 $= 23.56\text{cm}$

Find the length of the arc with  $\theta = 720^\circ$   
 and radius = 10m.

$S = r\theta$

$S = 10 \cdot 4\pi = 40\pi$  meters  
 exact answer

$40 \times \frac{\pi}{3.1415} = 125.66\text{m}$   
 estimate to 2 decimal places



Wheel with diameter of 2ft  
How many miles will you travel in 1,000,000  
revolutions

$$S = r\theta$$

$$S = 1\text{ft} \cdot 1,000,000 \cdot 2\pi = \frac{2,000,000\pi \text{ ft}}{5280 \text{ ft}} \text{ m}$$

$$= 1190 \text{ miles}$$