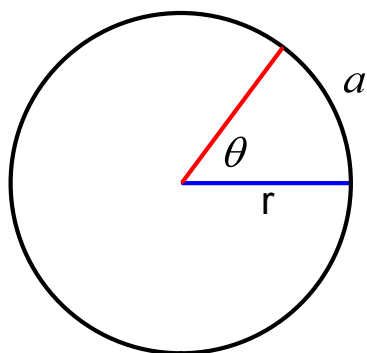


Oct 23-10:15 AM

## Unit 4: Trigonometric Functions

### Radian Measure

Oct 23/2014



An angle measurement can be defined as the ratio of the arc length to the radius of a circle:

$$\theta = \frac{a}{r}$$

For a full circle, the arc length is the circumference:

$$C = 2\pi r$$

Therefore, the angle described by a full circle,  $360^\circ$ , is:

$$360^\circ = \frac{2\pi r}{r} = 2\pi$$

Oct 23-9:35 AM

Ex.1 Convert each of the following angles:

- (a)  $20^\circ$   
 (b)  $225^\circ$

(c)  $\frac{5\pi}{6}$

(d) 1.75

$$360^\circ = 2\pi$$

$$180^\circ = \pi$$

equivalent angles

$$\frac{180^\circ}{\pi} = 1 = \frac{\pi}{180^\circ}$$

$$(a) \overset{1}{20}^\circ \times \frac{\pi}{\cancel{180}^\circ} = \frac{\pi}{9} \text{ radians}$$

$$(b) \overset{5}{\cancel{225}}^\circ \times \frac{\pi}{\cancel{180}^\circ} = \frac{5\pi}{4} = 1.25\pi$$

$$(c) \frac{5\pi}{\cancel{6}} \times \frac{\cancel{180}^\circ}{\pi} = 150^\circ$$

$$(d) 1.75 \times \frac{180^\circ}{\pi} = \frac{315^\circ}{\pi} = 100.3^\circ$$

Oct 23-9:59 AM

Assigned Work:

p.320 # 1 - 4, 6 - (10) (15)

8ac

96c

7e

$$7(e) \overset{3}{\cancel{-135}}^\circ \times \frac{\pi}{\cancel{180}^\circ} = -\frac{3\pi}{4}$$

$$8(a) \frac{2\pi}{\cancel{3}} \times \frac{\cancel{180}^\circ}{\pi} = 120^\circ$$

$$(c) \frac{\pi}{\cancel{4}} \times \frac{\cancel{180}^\circ}{\pi} = 45^\circ$$

Oct 15-8:11 PM

9(b)  $r = 65\text{m}$   $\theta = 1.25$

$$\theta = \frac{a}{r}$$

*in radians*

$$a = r\theta$$

$$= (65\text{m})(1.25)$$

$$= 81.25\text{m}$$

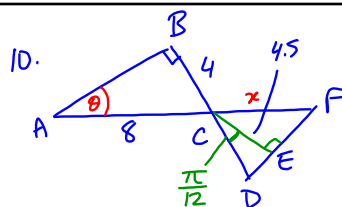
(c)  $150^\circ \times \frac{\pi}{180^\circ} = \frac{5\pi}{6}$

$$a = (65\text{m})\left(\frac{5\pi}{6}\right)$$

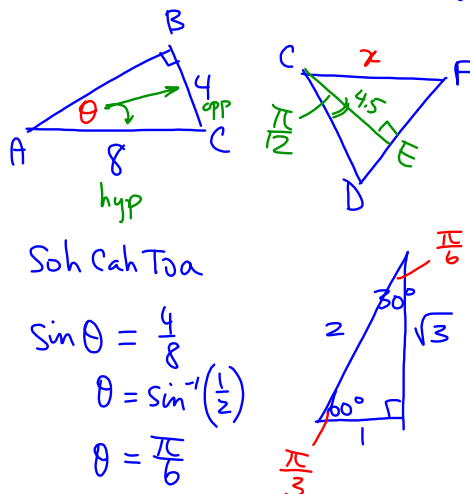
$$= \frac{325\pi}{6} \text{ m}$$

$$\approx 170.2 \text{ m}$$

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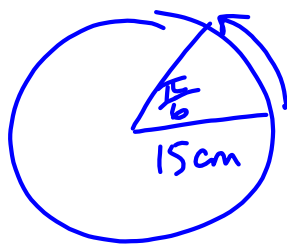


triangles  
relate?  $\angle ACB = \angle DCF$   
(opposite angles)



Oct 24-2:01 PM

15.



$$\begin{aligned}
 a_A &= r_A \theta_A \\
 &= (\cancel{15}^5) \left( \frac{\pi}{\cancel{6}_2} \right) \\
 &= \frac{5\pi}{2}
 \end{aligned}$$

$$\theta = \frac{a}{r}$$

$$a_B = ?$$

$$a = r\theta$$

$$a_c = ?$$

Oct 24-2:11 PM