Determine two coterminal angles (one positive and one negative) for each given angle: $\theta = -\frac{\pi}{3} radians$

To find positive coterminal angles add 360° or 2π to the given angle.
To find negative coterminal angles subtract 360° or 2π to the given angle.

Positive coterminal angle: $\theta = -\frac{\pi}{3} + 2\pi = \frac{5\pi}{3}$

Negative coterminal angle: $\theta = -\frac{\pi}{3} - 2\pi = -\frac{7\pi}{3}$

Converting between radians and degree for 50° and 2π.

To convert between radians and degree you need to know if the given value is either a degree or a radian. If there is a $^\circ$ then it is a degree else, it's radian.

Then for degree to radians you will multiply the given degree with $\frac{\pi}{180}$.

Then for radians to degree you will multiply the given degree with $\frac{180}{\pi}$.

Given: 50°

1. $50^\circ \times \frac{\pi}{180} =$
2. $= \frac{50\pi}{180}$
3. $= \frac{5\pi}{18}$

Given: 2π

1. $2\pi * \frac{180}{\pi} =$

2. $\frac{2\pi}{1} * \frac{180}{\pi} = \frac{360\pi}{\pi}$

3. $= 360^\circ$

Complementary Angles

When 2 positive angles add up to either 90° or 180°.

Given angle, $\theta = 45^\circ$:

1. $\theta_c = 90^\circ - 45^\circ = 45^\circ$
2. $\theta_s = 180^\circ - 45^\circ = 135^\circ$

Degree, Minutes, Second Form

A way to denote fraction parts, ex. 25°12’12”.

Given **DMS**: 12°23’12”

DMS to **Radians**

1. $12 + \frac{23}{60} + \frac{12}{3600} = 12.38666$

Given **Radian**: 12.625 Radians

Radians to **DMS**

1. 12.625 Radians [Multiple .625 by 60]
2. 0.625 · 60 = 37.5
3. 12°37.5’ [Multiple .5 by 60]
4. 0.5 · 60 = 30
5. = 12°37’30”

Finding Arc Length

A circle has a radius of 27 inches. Find the length of the arc intercepted by a central angle of 160°.

r = 27 in

Now convert degree to radians, as θ HAS to be a RADIAN.

1. $160^{\circ} \times \frac{\pi}{180} = \frac{160\pi}{180}$

2. $= \frac{8\pi}{9}$

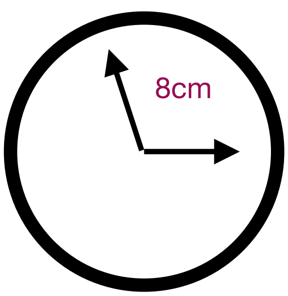
3. $27(\frac{8\pi}{9}) = 75.3982...$

4. $=$ 75.398 inch

Linear and Angular Speed.

LS = $\frac{r\theta}{t}$ & AS = $\frac{s}{rt}$

The second hand of a clock is 8-cm long. Find the linear speed of the tip of this second hand as it passes around the clock face.



It's a circle so we can imply $r = 2\pi$.
The arm is the minute-arm so $t = 60$.

LS = $\frac{8(2\pi)}{60} = 0.8377...$

LS $=$ 0.838 cm/min.

The circular blade on a saw rotates at 2,400 revolutions per minute (2,400 rpm).

Given θ = 2,400, Given t = 1, implied $r = 2\pi$

1. $2400(2\pi) = 4800\pi$

2. $\dfrac{4800\pi}{1} = 15079.6447...$ rads/min

If $r = 4$ we can solve for LS.

1. $\dfrac{4(4800\pi)}{1} = 19200\pi$ = 60318.579 in/mins.