U6 Pure Chapter 5

Radians

Course Structure

1: Converting between degrees and radians.

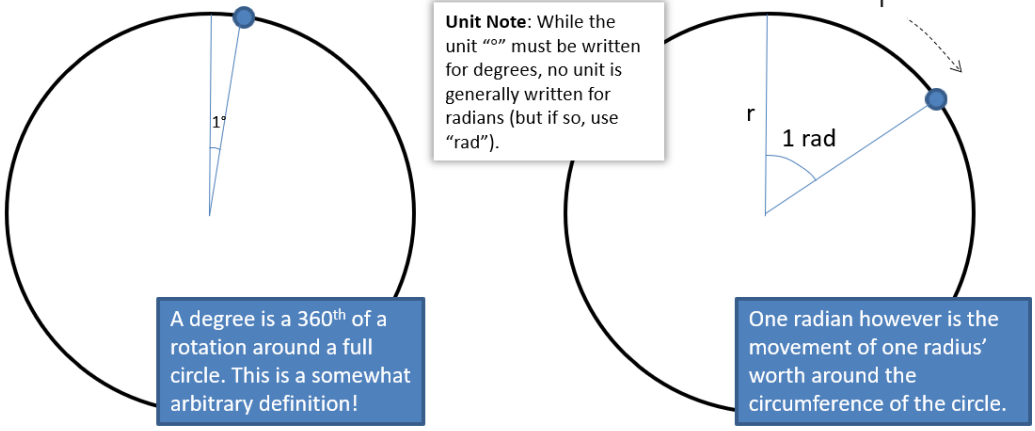
2: Find arc length and sector area (when using radians)

3: Solve trig equations in radians.

4: Small angle approximations

5 Trigonometry	5.1	**Understand and use the definitions of sine, cosine and tangent for all arguments;** **the sine and cosine rules;** **the area of a triangle in the form** $\frac{1}{2}ab\sin C$ Work with radian measure, including use for arc length and area of sector.	**Use of** x **and** y **coordinates of points on the unit circle to give cosine and sine respectively,** **including the ambiguous case of the sine rule.** Use of the formulae $s = r\theta$ and $A = \frac{1}{2}r^2\theta$ for arc lengths and areas of sectors of a circle.
	5.2	Understand and use the standard small angle approximations of sine, cosine and tangent $\sin\theta \approx \theta$, $\cos\theta \approx 1 - \frac{\theta^2}{2}$, $\tan\theta \approx \theta$ Where θ is in radians.	Students should be able to approximate, e.g. $\frac{\cos 3x - 1}{x\sin 4x}$ when x is small, to $-\frac{9}{8}$

Radians



Converting between radians and degrees

$90° =$	$135° =$
$\frac{\pi}{3} =$	$\frac{3}{2}\pi =$
$45° =$	$72° =$
$\frac{\pi}{6} =$	$\frac{5\pi}{6} =$

It is useful to <u>remember</u> the standard angle conversions….

$45° =$

$30° =$

$60° =$

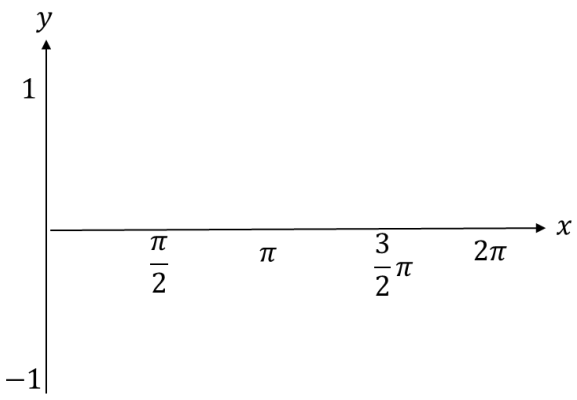
$135° =$

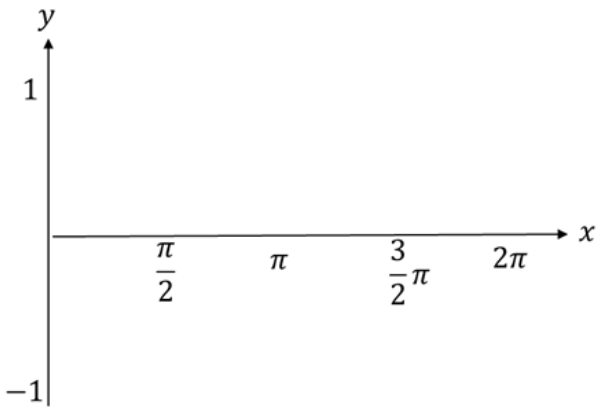
$270° =$

$90° =$

$120° =$

<u>Graph Sketching with Radians</u>





Test Your Understanding

Sketch the graph of $y = \cos\left(x + \frac{\pi}{2}\right)$ for $0 \leq x < 2\pi$