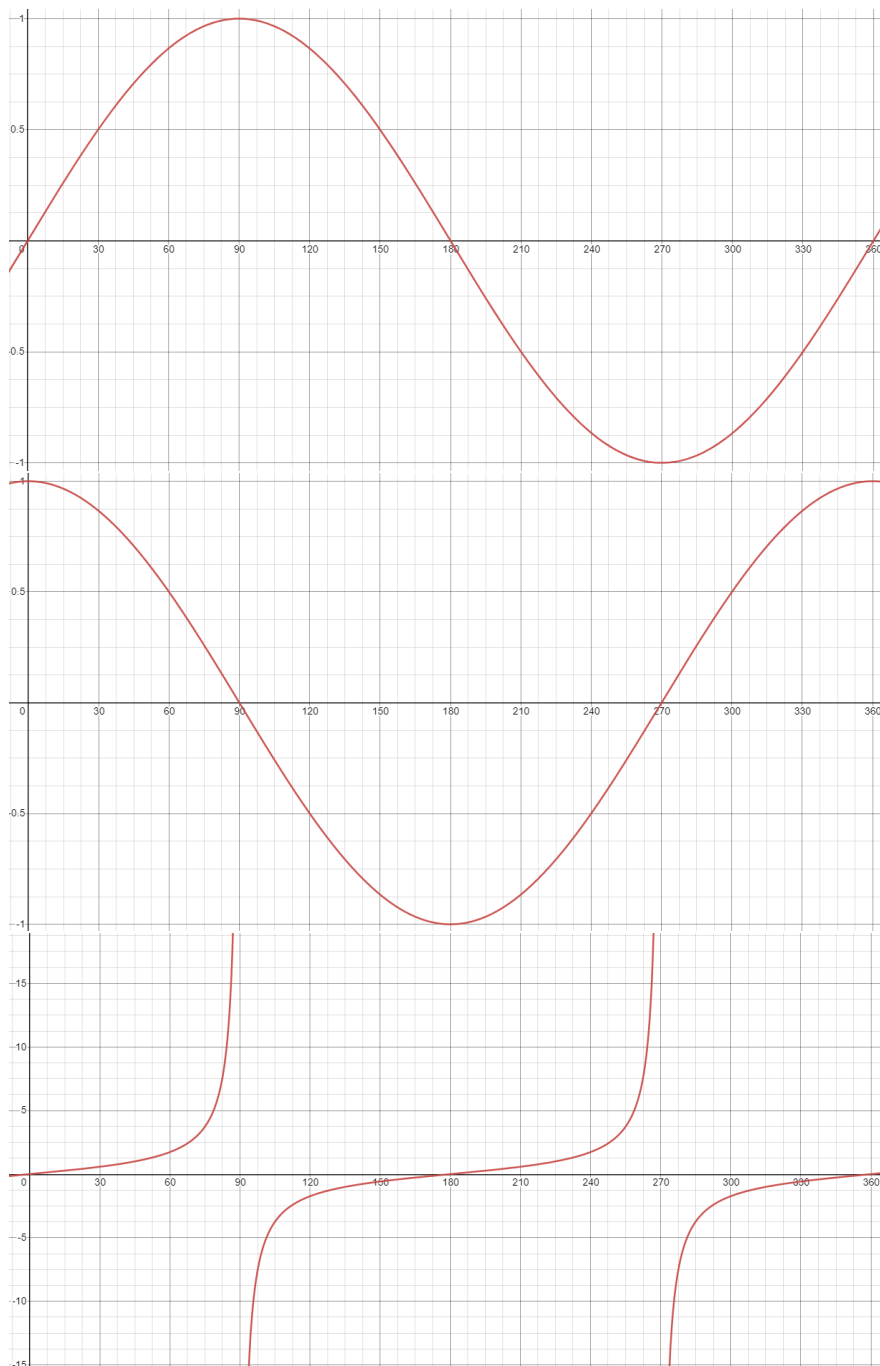


# Y10 Maths Knowledge Organiser Higher Tier: Advanced Trigonometry

What must I be able to do?	Key Vocabulary
<b>New content:</b> <ul style="list-style-type: none"> <li>□ Sketch graphs of <math>y = \sin x</math>, <math>y = \cos x</math> and <math>y = \tan x</math> <ul style="list-style-type: none"> <li>➤ Mathswatch 195a and 195b (GCSE)</li> </ul> </li> <li>□ Use trigonometric graphs to find solutions between 0 and <math>360^\circ</math> <ul style="list-style-type: none"> <li>➤ Mathswatch 195a and 195b (GCSE)</li> </ul> </li> <li>□ Know and use the Sine rule                             <ul style="list-style-type: none"> <li>➤ Mathswatch 202a (GCSE)</li> </ul> </li> <li>□ Know and use the Cosine rule                             <ul style="list-style-type: none"> <li>➤ Mathswatch 202b (GCSE)</li> </ul> </li> <li>□ Find the area of a triangle if you know two sides and the angle between                             <ul style="list-style-type: none"> <li>➤ Mathswatch 203 (GCSE)</li> </ul> </li> </ul>	<p><b>Periodic</b> A graph which repeats itself over and over at regular intervals.</p> <p><b>Asymptote</b> A line which a graph gets closer and closer to but does not touch or cross.</p>

## Trigonometric graphs



$y = \sin x$  Periodic every  $360^\circ$

Key coordinates:

(0, 0)

(90, 1)

(180, 0)

(270, -1)

(360, 0)

$y = \cos x$  Periodic every  $360^\circ$

Key coordinates:

(0, 1)

(90, 0)

(180, -1)

(270, 0)

(360, 1)

$y = \tan x$  Periodic every  $180^\circ$

Key coordinates:

(0, 0)

$x = 90$  is an asymptote

(180, 0)

$x = 270$  is an asymptote

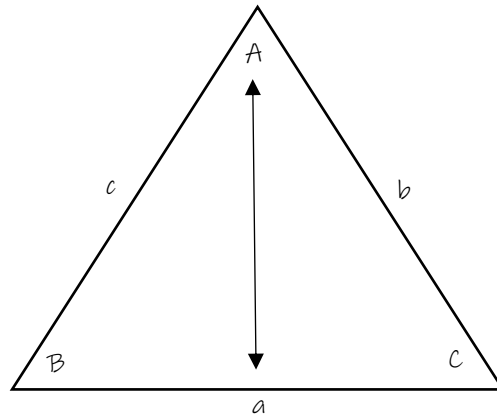
(360, 0)

### Labelling a non-rightangled triangle

Capital letters are used for the 3 angles

Lower case letters for the 3 sides

Letters of the same type are opposite each other



### Sine rule

Used when you know 3 out of these 4 things and need to find the 4<sup>th</sup>: 2 angles and the 2 sides opposite those angles.

Formula:  $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$  or

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Best used when wanting to find a missing side

Best used when wanting to find a missing angle

### Cosine rule

Used when you know 3 out of these 4 things and want to find the 4<sup>th</sup>: 3 sides and one angle.

Formula:  $a^2 = b^2 + c^2 - 2bc \cos A$  or

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

Used to find a missing side. Can be altered to allow you to find "b" or "c" instead.

Used to find a missing angle. Can be altered to allow you to find "B" or "C" instead.

Note: "2bc cosA" is 2 × b × c × cosA

Note: Don't forget to do cos<sup>-1</sup> to find your actual angle at the end.

### Area of a triangle

Used when you know 2 sides and the angle between.

Formula: Area of triangle =  $\frac{1}{2} ab \sin C$

Note: This means  $\frac{1}{2} \times b \times c \times \sin A$

**GLUE  
HERE**