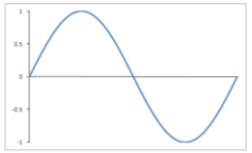
C2 Essentials: *Summary of AQA Core 2 content not provided in the formula book*

Rules of indices:

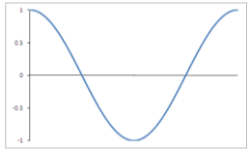
$x^a \times x^b = x^{a+b}$	$\frac{x^a}{x^b} = x^{a-b}$	$(x^a)^b = x^{ab}$
$x^{-n} = \frac{1}{x^n}$	$x^{\frac{1}{n}} = \sqrt[n]{x}$	$x^0 = 1$

Trig graphs:

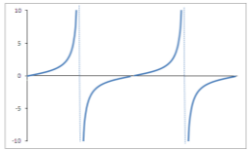
$y = \sin x$



$y = \cos x$



$y = \tan x$



Trigonometric rules:

Sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$

Cosine rule: $a^2 = b^2 + c^2 - 2bc\cos A$

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

Trigonometrical identities:

$\sin^2\theta + \cos^2\theta = 1$ $\quad\quad$ $\tan\theta = \frac{\sin\theta}{\cos\theta}$

Graph transformations:

$y = f(x)$	Translation	Stretch
x-direction (right)	$y = f(x-a)$	$y = f\left(\frac{x}{a}\right)$
y-direction (up)	$y = f(x) + a$	$y = af(x)$

$y = -f(x)$ represents a reflection in the x-axis.

$y = f(-x)$ represents a reflection in the y-axis.

Using radians:

$1\ full\ turn = 2\pi\ radians = 360\ degrees$

Arc length: $l = r\theta$

Sector area: $A = \frac{1}{2}r^2\theta$

Common trig results:

$\sin 30° = \sin\frac{\pi^c}{6} = \frac{1}{2}$	$\cos 30° = \cos\frac{\pi^c}{6} = \frac{\sqrt{3}}{2}$	$\tan 30° = \tan\frac{\pi^c}{6} = \frac{1}{\sqrt{3}}$
$\sin 45° = \sin\frac{\pi^c}{4} = \frac{1}{\sqrt{2}}$	$\cos 45° = \cos\frac{\pi^c}{4} = \frac{1}{\sqrt{2}}$	$\tan 45° = \tan\frac{\pi^c}{4} = 1$
$\sin 60° = \sin\frac{\pi^c}{3} = \frac{\sqrt{3}}{2}$	$\cos 60° = \cos\frac{\pi^c}{3} = \frac{1}{2}$	$\tan 60° = \tan\frac{\pi^c}{3} = \sqrt{3}$

Series:

$$\sum_{r=1}^{n} U_r = U_1 + U_2 + \cdots + U_n = S_n$$

$$\sum_{r=a}^{b} U_r = \sum_{r=1}^{b} U_r - \sum_{r=1}^{a-1} U_r$$

Formulae for n^{th} term, S_n and S_∞ (where valid) for arithmetic and geometric series are all provided in the formula book.

Rules of logarithms:

$\log_a b = c \Leftrightarrow a^c = b$	$\log_a x + \log_a y = \log_a xy$
$\log_a x^n = n\log_a x$	$\log_a x - \log_a xy = \log_a \frac{x}{y}$
$\log_a 1 = 0$	$\log_a a = 1$