

Sine Rule
(on formula list)

**Cosine Rule
to find a side**
(on formula list)

**Cosine Rule
to find an angle**
(on formula list)

Area of a Triangle
(on formula list)

Volume of a Sphere
(on formula list)

Volume of a Cone
(on formula list)

Volume of a Pyramid
(on formula list)

Standard Deviation
(on formula list)

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

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

$$A = \frac{1}{2} ab \sin C$$

$$(\text{or } A = \frac{1}{2} bh)$$

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

$$V = \frac{1}{3} \pi r^2 h$$

$$V = \frac{4}{3} \pi r^3$$

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

or

$$s = \sqrt{\frac{\sum x^2 - (\sum x)^2 / n}{n - 1}}$$

$$V = \frac{1}{3} Ah$$

Quadratic Formula

(on formula list)

Indices

$$x^m \times x^n$$

Indices

$$\frac{x^m}{x^n}$$

Indices

$$(x^m)^n$$

Indices

$$x^0$$

Indices

$$x^{-m}$$

Indices

$$x^{\frac{1}{n}}$$

Indices

$$x^{\frac{m}{n}}$$

$$x^{m+n}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x^{mn}$$

$$x^{m-n}$$

$$\frac{1}{x^m}$$

$$1$$

$$\sqrt[n]{x^m}$$

$$\sqrt[n]{x}$$

Expanding Brackets

$$(2x + 1)(x - 3)$$

Expanding Brackets

$$(x + 2)(x^2 - 3x + 4)$$

Factorisation

Common Factor

$$2x^2 - 8x$$

Factorisation

Difference of Squares

$$x^2 - 9$$

Factorisation

Quadratic

$$x^2 + 2x - 8$$

Completing the Square

$$x^2 + 4x + 7$$

Gradient

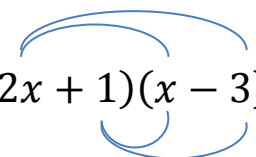
Equation of a Straight Line

$$(x + 2)(x^2 - 3x + 4) = x^3 - 3x^2 + 4x + 2x^2 - 6x + 8$$

simplify

$$x^3 - x^2 - 2x + 8$$

Use FOIL


$$(2x + 1)(x - 3) = 2x^2 - 6x + x - 3$$

simplify

$$= 2x^2 - 5x - 3$$

$$x^2 - 9 = (x + 3)(x - 3)$$

$$2x^2 - 8x = 2x(x - 4)$$

$$x^2 + 4x + 7 = (x + 2)^2 + 3$$

$$x^2 + 2x - 8 = (x + 4)(x - 2)$$

$$y = mx + c$$

or

$$y - b = m(x - a)$$

$$m = \frac{v}{h}$$

or

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Length of an Arc of a Circle

Area of a Sector of a Circle

Discriminant

Roots – Real and Distinct

Discriminant

Roots – Real and Equal

Discriminant

Roots – No Real Roots

Pythagoras Theorem

Converse of Pythagoras

$$\text{Sector} = \frac{x}{360} \times \pi r^2$$

$$\text{Arc} = \frac{x}{360} \times \pi d$$

$$b^2 - 4ac = 0$$

$$b^2 - 4ac > 0$$

In a right angled triangle

$$c^2 = a^2 + b^2$$

$$b^2 - 4ac < 0$$

If $c^2 = a^2 + b^2$ then
the triangle is right angled.

Trigonometry

sin ratio

Trigonometry

cos ratio

Trigonometry

tan ratio

Trigonometry

Trig Identities

Trigonometric Graphs

$$y = \sin x$$

Trigonometric Graphs

$$y = \cos x$$

Trigonometric Graphs

$$y = \tan x$$

Trigonometric Graph
Transformations

$$y = a \sin x \quad \text{or} \quad y = a \cos x$$

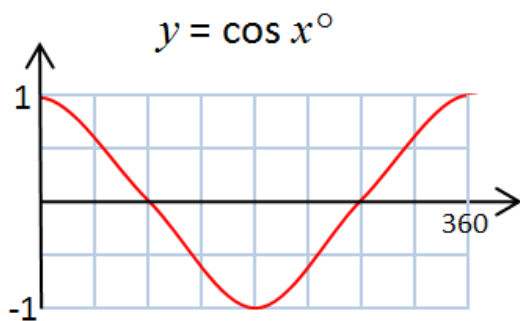
$$\cos x = \frac{adj}{hyp}$$

$$\sin x = \frac{opp}{hyp}$$

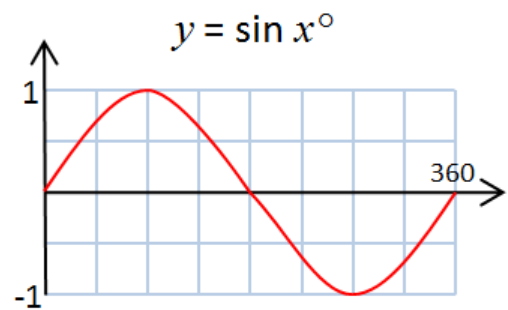
$$\sin^2 x + \cos^2 x = 1$$

$$\frac{\sin x}{\cos x} = \tan x$$

$$\tan x = \frac{opp}{adj}$$



max = 1, min = -1,
period = 360°

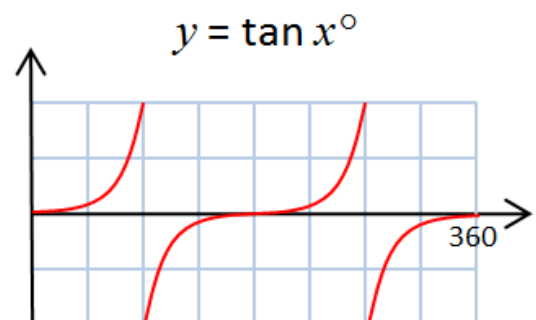


max = 1, min = -1,
period = 360°

Vertical Stretch

Maximum Value = a

Minimum Value = $-a$



max & min are undefined
period = 180°

Trigonometric Graph
Transformations

$$y = \sin bx \quad \text{or} \quad y = \cos bx$$

Trigonometric Graph
Transformations

$$y = \sin x \pm c \quad \text{or} \quad y = \cos x \pm c$$

Trigonometric Graph
Transformations

$$y = \sin(x \pm d) \quad \text{or} \quad y = \cos(x \pm d)$$

Magnitude of a Vector

Angles in Circles

Isosceles Triangles

Angles in Circles

Angle in a Semi-Circle

Angles in Circles

Tangent to a Circle

Angles in Circles

Chords

Vertical Shift

up 'c' when c is positive

down 'c' when c is negative

Change of Period

$$\text{Period} = \frac{360^\circ}{b}$$

$$\mathbf{v} = \begin{pmatrix} a \\ b \\ c \end{pmatrix}$$

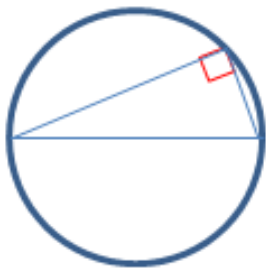
$$|\mathbf{v}| = \sqrt{a^2 + b^2 + c^2}$$

Horizontal Shift

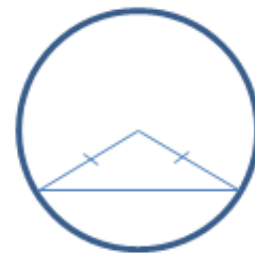
left 'd' when d is positive

right 'd' when d is negative

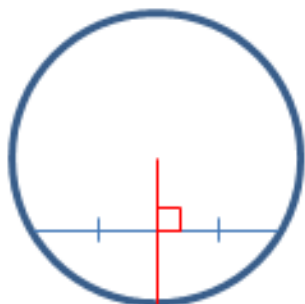
A triangle in a semi-circle will be right-angled.



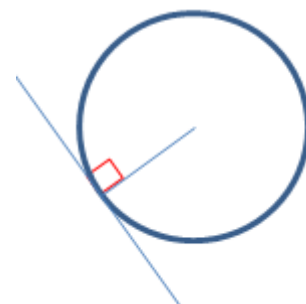
A triangle formed from 2 radii will be isosceles.



A chord that bisects a radius is perpendicular to the radius.



A tangent is perpendicular to the radius.



--	--