Mathematics B formulae sheet

Straight-line graphs

gradient (slope)
$m = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1} = \tan\theta$

gradient-intercept form
$y = mx + c$

point-gradient form
$y - y_1 = m\,(x - x_1)$

Parabolic graphs

turning point form
$y = a(x - h)^2 + k$

Quadratic equations

$ax^2 + bx + c = 0$

the solutions are given by

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

Pythagoras' theorem

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

Statistical definitions

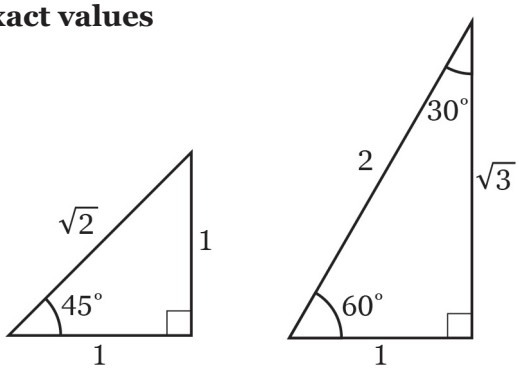
mean $= \frac{sum\ of\ scores}{n}$

median is the $\left(\frac{n+1}{2}\right)^{th}$ score

interquartile range $= Q_3 - Q_1$

range = *maximum score – minimum score*

Exact values



Trigonometric ratios

$\sin\theta = \frac{opposite\ side}{hypotenuse}$

$\cos\theta = \frac{adjacent\ side}{hypotenuse}$

$\tan\theta = \frac{opposite\ side}{adjacent\ side}$

Trigonometric graphs

the basic graph equations are
$y = a\sin bx$ and $y = a\cos bx$

period $= \frac{2\pi}{b}$

amplitude $= |a|$

Sine rule

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

Cosine rule

$c^2 = a^2 + b^2 - 2ab\cos C$

Angle measure

$180° = \pi\ radians$

Angle conversions

to convert degrees into radians $\times \frac{\pi}{180}$

to convert radians into degrees $\times \frac{180}{\pi}$

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