

List of formulas

Equation of a circle with centre (a, b) and radius r . $(x - a)^2 + (y - b)^2 = r^2$

Curved surface area, A , of cone of radius r , sloping edge l . $A = \pi rl$

Surface area, A , of sphere of radius r . $A = 4\pi r^2$

Volume, V , of pyramid or cone, base area A , height h . $V = \frac{1}{3}Ah$

Volume, V , of sphere of radius r . $V = \frac{4}{3}\pi r^3$

Quadratic equation For the equation $ax^2 + bx + c = 0$,

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

Binomial theorem $(a + b)^n = a^n + \binom{n}{1}a^{n-1}b + \binom{n}{2}a^{n-2}b^2 + \dots + \binom{n}{r}a^{n-r}b^r + \dots + b^n$,
 where n is a positive integer and $\binom{n}{r} = \frac{n!}{(n-r)!r!}$

Arithmetic series $u_n = a + (n - 1)d$
 $S_n = \frac{1}{2}n(a + l) = \frac{1}{2}n\{2a + (n - 1)d\}$

Geometric series $u_n = ar^{n-1}$
 $S_n = \frac{a(1 - r^n)}{1 - r} \quad (r \neq 1)$
 $S_\infty = \frac{a}{1 - r} \quad (|r| < 1)$

Identities $\sin^2 A + \cos^2 A = 1$
 $\sec^2 A = 1 + \tan^2 A$
 $\operatorname{cosec}^2 A = 1 + \cot^2 A$

Formulas for $\triangle ABC$ $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
 $a^2 = b^2 + c^2 - 2bc \cos A$
 $\Delta = \frac{1}{2} ab \sin C$

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