

Pure Math 30

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Exponential and Logarithmic Functions *Geometric Series*

$$A = P(1+i)^n$$

$$\log_a(MN) = \log_a M + \log_a N$$

$$\log_a\left(\frac{M}{N}\right) = \log_a M - \log_a N$$

$$\log_b c = \frac{\log_a c}{\log_a b}$$

$$t_n = ar^{n-1}$$

$$S_n = \frac{a(r^n - 1)}{r - 1}, r \neq 1$$

$$S_n = \left(\frac{rt_n - a}{r - 1}\right), r \neq 1$$

CONICS

$$Ax^2 + Cy^2 + Dx + Ey + F = 0,$$

where A, C, D, E, F ∈ I

$$(x-h)^2 + (y-k)^2 = r^2$$

$$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$$

$$y-k = a(x-h)^2$$

$$x-h = a(y-k)^2$$

$$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = \pm 1$$

TRIGONOMETRY I TRIGONOMETRY II

$$a = r\theta$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta} \quad \cot \theta = \frac{\cos \theta}{\sin \theta}$$

$$\sec \theta = \frac{1}{\cos \theta} \quad \csc \theta = \frac{1}{\sin \theta}$$

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

$$1 + \tan^2 x = \sec^2 x$$

$$1 + \cot^2 x = \csc^2 x$$

$$\sin(A+B) = \sin A \cos B + \cos A \sin B$$

$$\sin(A-B) = \sin A \cos B - \cos A \sin B$$

$$\cos(A+B) = \cos A \cos B - \sin A \sin B$$

$$\cos(A-B) = \cos A \cos B + \sin A \sin B$$

$$\sin(2A) = 2 \sin A \cos A$$

$$\cos(2A) = \cos^2 A - \sin^2 A$$

Permutations and Combinations

Statistics

$${}_n P_r = \frac{n!}{(n-r)!}$$

$${}_n C_r = \frac{n!}{(n-r)!r!}$$

$$t_{k+1} = {}_n C_k x^{n-k} y^k$$

$$P(k) = {}_n C_k p^k (1-p)^{n-k}$$

$$z = \frac{x - \mu}{\sigma}$$