

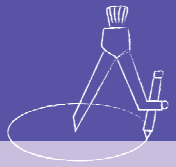


සංග්‍රහිත ගණිතය

14.4 ප්‍රතිලෝම ත්‍රිකෝණමිතික ශ්‍රිත අවකලනය

$a^2 = 2ab + b^2 = (a+b)^2$
 $\cos \frac{A}{2} = \pm \sqrt{\frac{1+\cos A}{2}}$
 $x^2 - a^2 = (x+a)(x-a)$
 $\cosh^2(x) - \sinh^2(x) = 1$
 $\tan^2(x) + \sec^2(x) = 1$
 $\csc(-x) = -\csc(x)$
 $\lim_{h \rightarrow 0} \frac{f(x_0+h) - f(x_0)}{h} = f'(x_0)$
 $\sinh(x) = \frac{e^x - e^{-x}}{2}$
 $X_{k+1} = (X_k + y/X_k)^{n-1} / 2$
 $\arcsin(z) = \ln(z + \sqrt{z^2 + 1})$
 $\cot(-x) = -\cot(x)$
 $C_{n,r} = \frac{n!}{r!(n-r)!}$
 $\operatorname{sech}(x) = \frac{1}{\cosh(x)} = \frac{2}{e^x + e^{-x}}$
 $x^2 + 2ax + a^2 = (x+a)^2$
 $\cos(-x) = \cos(x)$
 $\operatorname{sech}(z) = \operatorname{Sec}(iz)$
 $\cosh(x) = \frac{e^x + e^{-x}}{2}$
 $\operatorname{csch}(x) = \frac{1}{\sinh(x)} = \frac{2}{e^x - e^{-x}}$
 $\sim \forall x \forall y [p(x,y)] \equiv \exists x \exists y [\sim p(x,y)]$
 $\vec{u} + \vec{v} = \vec{v} + \vec{u}$
 $x^2 - 2ax + a^2 = (x-a)^2$
 $a_n = a_{n-1} \cdot n$

$\sim \forall x \forall y [p(x,y)] \equiv \exists x \exists y [\sim p(x,y)]$
 $\operatorname{coth}(z) = i \cot(iz)$
 $\operatorname{arccoth}(z) = \frac{1}{2} \ln \frac{z+1}{z-1}$
 $\sinh(x) = \frac{e^x - e^{-x}}{2}$
 $a^m \times a^n = a^{m+n}$
 $d = |x_1 - x_2|$
 $y^{1/n} = x$
 $\sqrt{A} = y_i * 2 \exp \frac{f(x_0+h) - f(x_0)}{h}$
 $(a^m)^n = a^{m \times n}$
 $M_e = L + I \left[\frac{\frac{n}{2} - F}{f} \right]$
 $a^m \cdot a^n = a^{m+n}$
 $\sec(-x) = \sec(x)$
 $\tan(-x) = -\tan(x)$
 $\operatorname{arcsch}(z) = \ln \frac{1 + \sqrt{1+z^2}}{z}$
 $\tanh(z) = -i \tan(iz)$
 $\operatorname{arcsech}(z) = \ln \frac{1 \pm \sqrt{1-z^2}}{z}$
 $\operatorname{csch}(z) = \cos(iz)$
 $b^2 = (a+b)^2$
 $\sin(-x) = -\sin(x)$
 $\frac{P(x)}{Q(x)} = G(x) + \frac{R(x)}{Q(x)}$
 $\frac{A}{B} \cap U$



14.4 ප්‍රතිලෝම ත්‍රිකෝණමිතික ශ්‍රිතවල අවකලනය .

(i) $\sin^{-1} x$ හි ව්‍යුත්පන්නය

$y = \sin^{-1} x$ ලෙස ගනිමු .

මෙහි $-\frac{\pi}{2} < y < \frac{\pi}{2}$ සහ $-1 < x < 1$ වේ.

$\Leftrightarrow x = \sin y$

$\frac{d}{dx} : 1 = \cos y \frac{dy}{dx}$

$\therefore \frac{dy}{dx} = \frac{1}{\cos y}; \cos y \neq 0$

තවද $-\frac{\pi}{2} < y < \frac{\pi}{2}$ බැවින් $\cos y = +\sqrt{1 - \sin^2 y}$
 $= +\sqrt{1 - x^2}$

$\therefore \frac{d}{dx} \{ \sin^{-1} \} = \frac{1}{\sqrt{1 - x^2}}; |x| < 1$



(ii) $\cos^{-1} x$ හි ව්‍යුත්පන්නය

$y = \cos^{-1} x$ ලෙස ගනිමු .

මෙහි $0 < y < \pi$ සහ $-1 < x < 1$ වේ.

$\Leftrightarrow x = \cos y$

$\frac{d}{dx} : 1 = -\sin y \frac{dy}{dx}$

$\therefore \frac{dy}{dx} = -\frac{1}{\sin y}; \sin y \neq 0$

තවද $0 < y < \pi$ බැවින් $\sin y = +\sqrt{1 - \cos^2 y} = +\sqrt{1 - x^2}$

$\therefore \frac{d}{dx} \{ \cos^{-1} \} = -\frac{1}{\sqrt{1 - x^2}}; |x| < 1$

