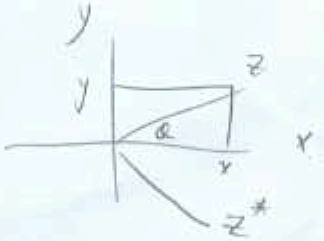


$r = \sqrt{x^2+y^2}$

$\theta = \tan^{-1}\left(\frac{y}{x}\right)$

$$z = x + iy = re^{i\theta} = r(\cos\theta + i\sin\theta)$$

$z_1 = x_1 + iy_1 \quad z_2 = x_2 + iy_2$

$z_1 + z_2 = (x_1 + x_2) + i(y_1 + y_2)$

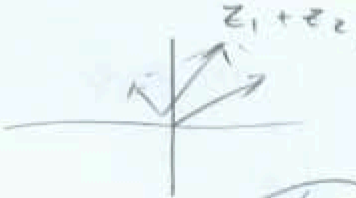
$z_1 z_2 = (x_1x_2 - y_1y_2) + i(x_1y_2 + y_1x_2)$

$z_1 z_2 = r_1 r_2 e^{i(\theta_1 + \theta_2)}$

蒂美博定理

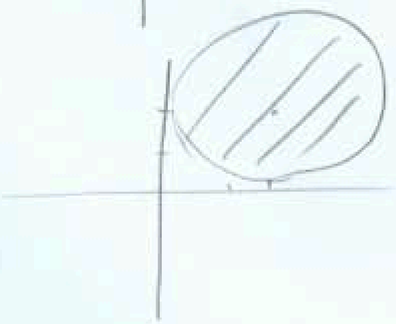
$\cos(n\theta) + i\sin(n\theta) = (\cos\theta + i\sin\theta)^n$

複數共軛 $z = z^* = x - iy$



$|z - 2| = 2$

↳ 圓



$\sqrt{(x-2)^2 + y^2} = 2$

$(x-2)^2 + y^2 = 4$ 圓公式

三角反函數

為了不一對多，故 θ 有個範圍

If $\sin(\theta) = x$ when $-\pi/2 \le \theta \le \pi/2$

and $-1 \le x \le 1$ $\Rightarrow \arcsin(x) = \theta$

If $\cos\theta = x$ when $0 \le \theta \le \pi$

and $-1 \le x \le 1$ $\Rightarrow \arccos(x) = \theta$

If $\tan\theta = x$ when $-\pi/2 \le \theta \le \pi/2$

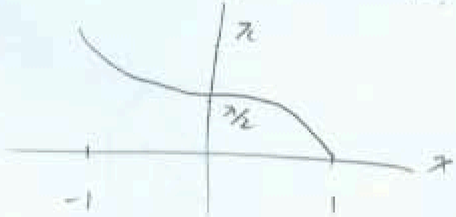
and $-\infty \le x \le \infty$ $\Rightarrow \arctan x = \theta$

$\sin^{-1}(\sin \pi/6) = \pi/6$ (V)

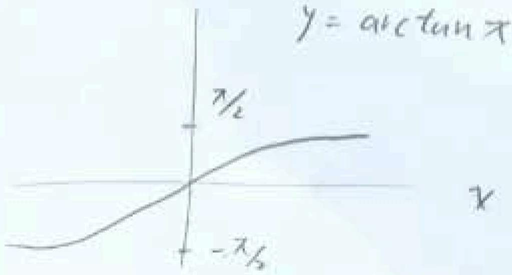
$\sin^{-1}(\underbrace{\sin \frac{7\pi}{6}}_{-1/2}) = \frac{7\pi}{6}$ (X) $\rightarrow -\pi/6$

$\Rightarrow$ $y = \arcsin x$

$y = \arccos x$

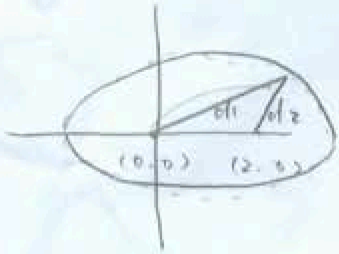


$y = \arctan x$



橢圓

$|z| + |z-2| = 4$



$d_1 + d_2 = 4$

(0, 0), (2, 0) 焦点

(0, 1) 中心点

a 長軸長

b 短軸長

$$\Rightarrow \frac{(x-1)^2}{4} + \frac{(y-0)^2}{3} = 1$$

$\Rightarrow$ 橢圓通式 $\dfrac{(x-h)^2}{a^2} + \dfrac{(x-k)^2}{b^2} = 1$

(h, k) 中心点