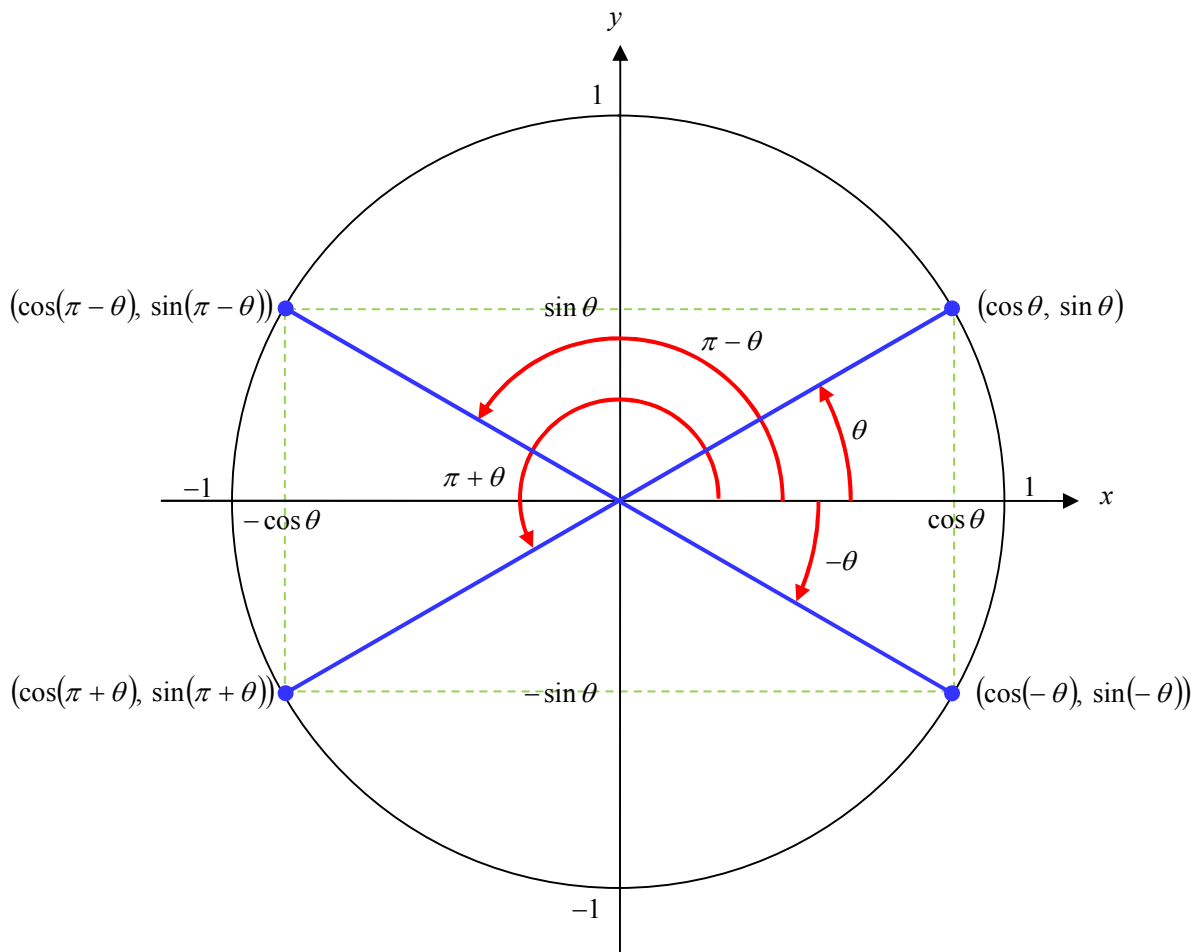


サイン・コサイン変換早見図

複素数の極形式 $r(\cos \theta + i \sin \theta)$ 表示などに便利

上図より,

$$(\cos(\pi - \theta), \sin(\pi - \theta)) = (-\cos \theta, \sin \theta)$$

$$(\cos(\pi + \theta), \sin(\pi + \theta)) = (-\cos \theta, -\sin \theta)$$

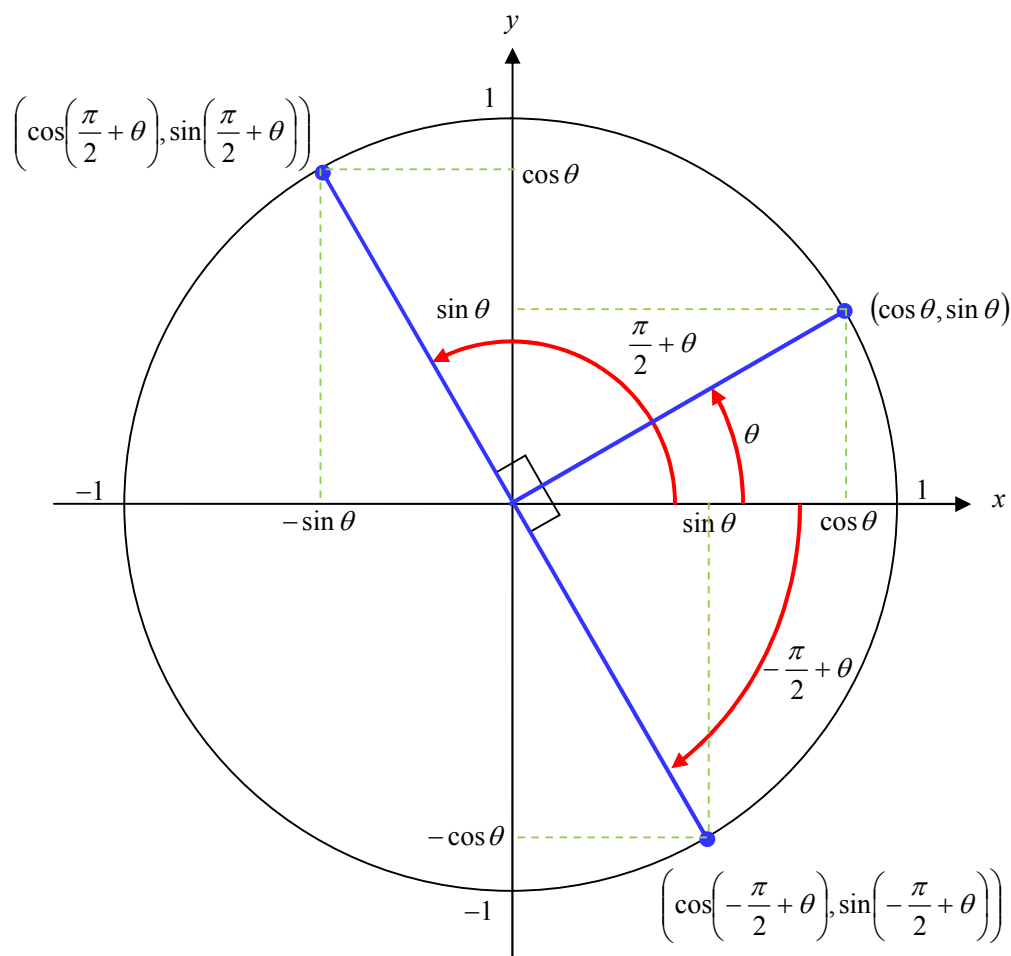
$$(\cos(-\theta), \sin(-\theta)) = (\cos \theta, -\sin \theta)$$

例

$$r(-\cos \alpha + i \sin \alpha) = r(\cos(\pi - \alpha) + i \sin(\pi - \alpha))$$

$$r(-\cos \alpha - i \sin \alpha) = r(\cos(\pi + \alpha) + i \sin(\pi + \alpha))$$

$$r(\cos \alpha - i \sin \alpha) = r(\cos(-\alpha) + i \sin(-\alpha))$$



上図より,

$$\left(\cos\left(\frac{\pi}{2} + \theta\right), \sin\left(\frac{\pi}{2} + \theta\right) \right) = (-\sin \theta, \cos \theta)$$

$$\left(\cos\left(-\frac{\pi}{2} + \theta\right), \sin\left(-\frac{\pi}{2} + \theta\right) \right) = (\sin \theta, -\cos \theta)$$

例

$$r(-\sin \alpha + i \cos \alpha) = r\left(\cos\left(\frac{\pi}{2} + \alpha\right) + i \sin\left(\frac{\pi}{2} + \alpha\right) \right)$$

$$r(\sin \alpha - i \cos \alpha) = r\left(\cos\left(-\frac{\pi}{2} + \alpha\right) + i \sin\left(-\frac{\pi}{2} + \alpha\right) \right)$$