

## 加法定理

$$\sin(\alpha \pm \beta) = \sin \alpha \cos \beta \pm \cos \alpha \sin \beta$$

$$\cos(\alpha \pm \beta) = \cos \alpha \cos \beta \mp \sin \alpha \sin \beta$$

$$\tan(\alpha + \beta) = \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}$$

$$\tan(\alpha - \beta) = \frac{\tan \alpha - \tan \beta}{1 + \tan \alpha \tan \beta}$$

## 2倍角の公式

$$\sin 2\alpha = 2\sin \alpha \cos \alpha$$

$$\cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha$$

$$\tan 2\alpha = \frac{2\tan \alpha}{1 - \tan^2 \alpha}$$

## 半角の公式

$$\sin^2 \frac{\alpha}{2} = \frac{1 - \cos \alpha}{2}$$

$$\cos^2 \frac{\alpha}{2} = \frac{1 + \cos \alpha}{2}$$

$$\tan^2 \frac{\alpha}{2} = \frac{1 - \cos \alpha}{1 + \cos \alpha}$$

## 3倍角の公式

$$\sin 3\alpha = 3\sin \alpha - 4\sin^3 \alpha$$

$$\cos 3\alpha = -3\cos \alpha + 4\cos^3 \alpha$$

## 合成公式

$$a\sin \theta + b\cos \theta = \sqrt{a^2 + b^2} \sin(\theta + \alpha)$$

$$\alpha \text{ は } \sin \alpha = \frac{b}{\sqrt{a^2 + b^2}} \quad \cos \alpha = \frac{a}{\sqrt{a^2 + b^2}}$$

をみたす角度