

$$\textcircled{1} \sin(2\theta) = 2 \sin \theta \cos \theta$$

$$\textcircled{2} \cos(2\theta) = \cos^2 \theta - \sin^2 \theta$$

$$\textcircled{3} \cos(2\theta) = 1 - 2 \sin^2 \theta$$

$$\textcircled{4} \cos(2\theta) = 2 \cos^2 \theta - 1$$

$$\textcircled{5} \tan(2\theta) = \frac{2 \tan \theta}{1 - \tan^2 \theta}$$

$$\textcircled{6} \sin^2 \theta = \frac{1 - \cos(2\theta)}{2}$$

$$\textcircled{7} \cos^2 \theta = \frac{1 + \cos(2\theta)}{2}$$

$$\textcircled{8} \tan^2 \theta = \frac{1 - \cos(2\theta)}{1 + \cos(2\theta)}$$

$$\textcircled{9} \sin^2 \frac{\alpha}{2} = \frac{1 - \cos \alpha}{2}$$

$$\textcircled{10} \cos^2 \frac{\alpha}{2} = \frac{1 + \cos \alpha}{2}$$

$$\textcircled{11} \tan^2 \frac{\alpha}{2} = \frac{1 - \cos \alpha}{1 + \cos \alpha}$$

$$\textcircled{12} \sin \frac{\alpha}{2} = \pm \sqrt{\frac{1 - \cos \alpha}{2}}$$

$$\textcircled{13} \cos \frac{\alpha}{2} = \pm \sqrt{\frac{1 + \cos \alpha}{2}}$$

$$\textcircled{14} \tan \frac{\alpha}{2} = \pm \sqrt{\frac{1 - \cos \alpha}{1 + \cos \alpha}}$$

$$\textcircled{15} \tan \frac{\alpha}{2} = \frac{1 - \cos \alpha}{\sin \alpha}$$

$$\textcircled{16} \tan \frac{\alpha}{2} = \frac{\sin \alpha}{1 + \cos \alpha}$$

\pm IS DETERMINED
BY QUADRANT
OF $\frac{\alpha}{2}$