

Half-Angle Tangent Formulas

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

+ or – determined by quadrant of angle $\frac{\alpha}{2}$

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

Half-Angle Tangent Formulas

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

Evaluate the following

$$\tan 22.5^\circ$$

Half-Angle Tangent Formulas

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

Evaluate the following

$$\tan \frac{\pi}{12}$$

Half-Angle Tangent Formulas

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

Evaluate the following

$$\tan 105^\circ$$

Half-Angle Tangent Formulas

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

Given $\sin \alpha = \frac{3}{5}$; α lies in quadrant 2, determine the value of $\tan \frac{\alpha}{2}$

Half-Angle Tangent Formulas

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

Given $\cos \alpha = -\frac{1}{2}$; α lies in quadrant 3, determine the value of $\tan \frac{\alpha}{2}$

Half-Angle Tangent Formulas

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