삼각함수의 반각 공식
(Half Angle Formula for Trigonometric Functions)

Half Angle Formula for Trigonometric Functions

▸ Start ▸ End

Half Angle Formula for Trigonometric Functions

Start End

$$\sin^2 \frac{\alpha}{2} \quad =$$

Half Angle Formula for Trigonometric Functions

Start End

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

Half Angle Formula for Trigonometric Functions

Start End

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

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

Half Angle Formula for Trigonometric Functions

Start End

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

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

Half Angle Formula for Trigonometric Functions

Start End

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

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

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

Half Angle Formula for Trigonometric Functions

Start End

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

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

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

Half Angle Formula for Trigonometric Functions

Start End

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

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

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

Half Angle Formula for Trigonometric Functions

Half Angle Formula for Trigonometric Functions

$$\cos\alpha \quad =$$

Half Angle Formula for Trigonometric Functions

$$\cos\alpha = \cos\left(2\cdot\frac{\alpha}{2}\right)$$

Half Angle Formula for Trigonometric Functions

$$\begin{aligned} \cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\ &= 1-2\sin^2\frac{\alpha}{2} \end{aligned}$$

$$\begin{aligned} \cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\ &= 1-2\sin^2\frac{\alpha}{2} \\ 2\sin^2\frac{\alpha}{2} &= \end{aligned}$$

Half Angle Formula for Trigonometric Functions

$$\begin{aligned} \cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\ &= 1-2\sin^2\frac{\alpha}{2} \\ 2\sin^2\frac{\alpha}{2} &= 1-\cos\alpha \end{aligned}$$

Half Angle Formula for Trigonometric Functions

$$\begin{aligned}
\cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\
&= 1-2\sin^2\frac{\alpha}{2} \\
2\sin^2\frac{\alpha}{2} &= 1-\cos\alpha \\
\therefore \sin^2\frac{\alpha}{2} &=
\end{aligned}$$

Half Angle Formula for Trigonometric Functions

$$\begin{aligned}
\cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\
&= 1-2\sin^2\frac{\alpha}{2} \\
2\sin^2\frac{\alpha}{2} &= 1-\cos\alpha \\
\therefore \sin^2\frac{\alpha}{2} &= \frac{1-\cos\alpha}{2}
\end{aligned}$$

Half Angle Formula for Trigonometric Functions

Half Angle Formula for Trigonometric Functions

$$\cos\alpha \quad =$$

Half Angle Formula for Trigonometric Functions

$$\cos\alpha = \cos\left(2\cdot\frac{\alpha}{2}\right)$$

Half Angle Formula for Trigonometric Functions

$$\begin{aligned} \cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\ &= 2\cos^2\frac{\alpha}{2}-1 \end{aligned}$$

Half Angle Formula for Trigonometric Functions

$$\begin{aligned} \cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\ &= 2\cos^2\frac{\alpha}{2}-1 \\ \cos\alpha+1 &= \end{aligned}$$

Half Angle Formula for Trigonometric Functions

$$\begin{aligned} \cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\ &= 2\cos^2\frac{\alpha}{2}-1 \\ \cos\alpha+1 &= 2\cos^2\frac{\alpha}{2} \end{aligned}$$

Half Angle Formula for Trigonometric Functions

$$\begin{aligned}
\cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\
&= 2\cos^2\frac{\alpha}{2}-1 \\
\cos\alpha+1 &= 2\cos^2\frac{\alpha}{2} \\
\therefore \cos^2\frac{\alpha}{2} &=
\end{aligned}$$

Half Angle Formula for Trigonometric Functions

$$\begin{aligned}
\cos\alpha &= \cos\left(2\cdot\frac{\alpha}{2}\right) \\
&= 2\cos^2\frac{\alpha}{2}-1 \\
\cos\alpha+1 &= 2\cos^2\frac{\alpha}{2} \\
\therefore \cos^2\frac{\alpha}{2} &= \frac{1+\cos\alpha}{2}
\end{aligned}$$

Half Angle Formula for Trigonometric Functions

Half Angle Formula for Trigonometric Functions

$$\tan^2 \frac{\alpha}{2} \quad =$$

Half Angle Formula for Trigonometric Functions

$$\tan^2 \frac{\alpha}{2} = \frac{\sin^2 \frac{\alpha}{2}}{\cos^2 \frac{\alpha}{2}}$$

Half Angle Formula for Trigonometric Functions

$$\tan^2 \frac{\alpha}{2} = \frac{\sin^2 \frac{\alpha}{2}}{\cos^2 \frac{\alpha}{2}}$$

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

$$\tan^2 \frac{\alpha}{2} = \frac{\sin^2 \frac{\alpha}{2}}{\cos^2 \frac{\alpha}{2}}$$

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

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

Github:
https://min7014.github.io/math20230421001.html

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