삼각함수의 합 또는 차를 곱으로 변형하는 공식
(Formulas that transform sums or differences of trigonometric functions into products)

Formulas that transform sums or differences of trigonometric functions into products

Start End

Formulas that transform sums or differences of trigonometric functions into products

Start End

$$\sin A + \sin B \quad =$$

Start End

$$\sin A + \sin B = 2 \sin \frac{A+B}{2} \cos \frac{A-B}{2}$$ proof

Formulas that transform sums or differences of trigonometric functions into products

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$$\sin A + \sin B = 2\sin\frac{A+B}{2}\cos\frac{A-B}{2}$$ proof

$$\sin A - \sin B =$$

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$$\sin A + \sin B = 2\sin\frac{A+B}{2}\cos\frac{A-B}{2}$$ proof

$$\sin A - \sin B = 2\cos\frac{A+B}{2}\sin\frac{A-B}{2}$$ proof

Start End

$$\sin A + \sin B = 2\sin\frac{A+B}{2}\cos\frac{A-B}{2}$$ proof

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Formulas that transform sums or differences of trigonometric functions into products

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$$\sin A + \sin B = 2\sin\frac{A+B}{2}\cos\frac{A-B}{2}$$ proof

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$$\cos A - \cos B = -2\sin\frac{A+B}{2}\sin\frac{A-B}{2}$$ proof

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Formulas that transform sums or differences of trigonometric functions into products

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$$\sin\alpha\cos\beta = \frac{1}{2}\{\sin(\alpha+\beta)+\sin(\alpha-\beta)\}$$

Formulas that transform sums or differences of trigonometric functions into products

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$$\begin{aligned} \sin\alpha\cos\beta &= \frac{1}{2}\{\sin(\alpha+\beta)+\sin(\alpha-\beta)\} \\ 2\sin\alpha\cos\beta &= \sin(\alpha+\beta)+\sin(\alpha-\beta) \end{aligned}$$

Formulas that transform sums or differences of trigonometric functions into products

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$$
\begin{aligned}
\sin\alpha\cos\beta &= \frac{1}{2}\{\sin(\alpha+\beta)+\sin(\alpha-\beta)\} \\
2\sin\alpha\cos\beta &= \sin(\alpha+\beta)+\sin(\alpha-\beta) \\
\sin(\alpha+\beta)+\sin(\alpha-\beta) &= 2\sin\alpha\cos\beta
\end{aligned}
$$

Formulas that transform sums or differences of trigonometric functions into products

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$$
\textit{Let} \quad \mathrm{A} = \alpha+\beta \quad , \mathrm{B} = \alpha-\beta
$$

Formulas that transform sums or differences of trigonometric functions into products

Home Start End

$$\begin{aligned}
\sin\alpha\cos\beta &= \frac{1}{2}\{\sin(\alpha+\beta)+\sin(\alpha-\beta)\} \\
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\end{aligned}$$

$$\begin{aligned}
\textit{Let}\quad \mathrm{A} &= \alpha+\beta \quad , \mathrm{B}=\alpha-\beta \\
\alpha &= \frac{\mathrm{A}+\mathrm{B}}{2} \quad , \beta = \frac{\mathrm{A}-\mathrm{B}}{2}
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Formulas that transform sums or differences of trigonometric functions into products

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\sin\alpha\cos\beta &= \frac{1}{2}\{\sin(\alpha+\beta)+\sin(\alpha-\beta)\} \\
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\end{aligned}$$

$$\textit{Let}\quad \mathrm{A} = \alpha+\beta \quad , \ \mathrm{B} = \alpha-\beta$$

$$\alpha = \frac{\mathrm{A}+\mathrm{B}}{2} \quad , \beta = \frac{\mathrm{A}-\mathrm{B}}{2}$$

$$\therefore \sin\mathrm{A}+\sin\mathrm{B} = 2\sin\frac{\mathrm{A}+\mathrm{B}}{2}\cos\frac{\mathrm{A}-\mathrm{B}}{2}$$

Formulas that transform sums or differences of trigonometric functions into products

Formulas that transform sums or differences of trigonometric functions into products

$$\cos\alpha\sin\beta = \frac{1}{2}\{\sin(\alpha+\beta) - \sin(\alpha-\beta)\}$$

Formulas that transform sums or differences of trigonometric functions into products

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$$\begin{aligned} \cos\alpha\sin\beta &= \frac{1}{2}\{\sin(\alpha+\beta)-\sin(\alpha-\beta)\} \\ 2\cos\alpha\sin\beta &= \sin(\alpha+\beta)-\sin(\alpha-\beta) \end{aligned}$$

Formulas that transform sums or differences of trigonometric functions into products

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\cos\alpha\sin\beta &= \frac{1}{2}\{\sin(\alpha+\beta)-\sin(\alpha-\beta)\} \\
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\begin{aligned}
\cos\alpha\sin\beta &= \frac{1}{2}\{\sin(\alpha+\beta)-\sin(\alpha-\beta)\} \\
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\therefore \sin\mathrm{A}-\sin\mathrm{B} &= 2\cos\frac{\mathrm{A}+\mathrm{B}}{2}\sin\frac{\mathrm{A}-\mathrm{B}}{2}
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Formulas that transform sums or differences of trigonometric functions into products

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

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Formulas that transform sums or differences of trigonometric functions into products

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$$\sin\alpha\sin\beta = -\frac{1}{2}\{\cos(\alpha+\beta)-\cos(\alpha-\beta)\}$$

Formulas that transform sums or differences of trigonometric functions into products

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

Home Start End

$$\begin{aligned} \sin\alpha\sin\beta &= -\frac{1}{2}\{\cos(\alpha+\beta)-\cos(\alpha-\beta)\} \\ -2\sin\alpha\sin\beta &= \cos(\alpha+\beta)-\cos(\alpha-\beta) \\ \cos(\alpha+\beta)-\cos(\alpha-\beta) &= -2\sin\alpha\sin\beta \end{aligned}$$

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$$\begin{aligned}
\sin\alpha\sin\beta &= -\frac{1}{2}\{\cos(\alpha+\beta)-\cos(\alpha-\beta)\} \\
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\therefore \cos\mathrm{A}-\cos\mathrm{B} &= -2\sin\frac{\mathrm{A}+\mathrm{B}}{2}\sin\frac{\mathrm{A}-\mathrm{B}}{2}
\end{aligned}$$

Github:
https://min7014.github.io/math20230423001.html

Click or paste URL into the URL search bar, and you can see a picture moving.