

Wolfram|Alpha Input: integrate cos2x/(sinx)^2

STEP 1

Take the integral:

$$\int \cos(2x) \csc^2(x) dx$$

STEP 2

Simplify the integrand $\cos(2x) \csc^2(x)$ to get $\cot^2(x) - 1$:

$$= \int (\cot^2(x) - 1) dx$$

STEP 3

Integrate the sum term by term and factor out constants:

$$= \int \cot^2(x) dx - \int 1 dx$$

STEP 4

Write $\cot^2(x)$ as $\csc^2(x) - 1$:

$$= \int (\csc^2(x) - 1) dx - \int 1 dx$$

STEP 5

Integrate the sum term by term and factor out constants:

$$= \int \csc^2(x) dx - 2 \int 1 dx$$

STEP 6

The integral of $\csc^2(x)$ is $-\cot(x)$:

$$= -\cot(x) - 2 \int 1 dx$$

STEP 7

The integral of 1 is x :

Answer:

$$= -2x - \cot(x) + \text{constant}$$

