

Integration - Misc - Exercises (Sol'ns)(1 page; 7/10/18)

(1) If $\int_{-a}^a f(x) dx = b$, find $\int_{-a}^a f(-x) dx$

Solution

b also, as $f(-x)$ is the reflection of $f(x)$ in the y -axis

(2) Explain the following 'paradox':

$$\int \frac{1}{2x} dx = \frac{1}{2} \int \frac{1}{x} dx = \frac{1}{2} \ln x + C$$

but $\int \frac{1}{2x} dx = \frac{1}{2} \ln(2x) + C$ (by the reverse Chain rule)

Solution

$\ln(2x)$ can be written as $\ln 2 + \ln x$, giving the first form of the answer, after renaming the constant