

# Arbeidshefte

## Integralregning Trigonometri

### Formel

$$\int \cos x \, dx = \sin x + C$$
$$\int \sin x \, dx = -\cos x + C$$

### Formel

$$\int \tan x \, dx = \int \frac{\sin x}{\cos x} \, dx$$
$$MR : \left[ u = \cos x, u' = -\sin x \right]$$
$$= \int \frac{\sin x}{u} \cdot \frac{1}{-\sin x} \, du$$
$$= - \int \frac{1}{u} \, du$$
$$= -\ln|u| + C$$
$$= -\ln|\cos x| + C$$

### Formel

$$\int \sin^2 x \, dx = -\sin x \cos x - \int -\cos^2 x \, dx$$
$$MR : u = \sin x, u' = \cos x, v = -\cos x, v' = \sin x$$
$$\int \sin^2 x \, dx = -\sin x \cos x + \int 1 \, dx - \int \sin^2 x \, dx$$
$$2 \int \sin^2 x \, dx = -\sin x \cos x + x + C$$
$$\int \sin^2 x \, dx = \frac{1}{2}(-\sin x \cos x + x) + C$$
$$= -\frac{1}{2} \sin x \cos x + \frac{1}{2}x + C$$

**Formel**

$$\begin{aligned}\int \cos^2 x \, dx &= \int 1 - \sin^2 x \, dx \\ \int \cos^2 x \, dx &= x - \int \sin^2 x \, dx \\ \int \cos^2 x \, dx &= x - \left( -\frac{1}{2}(\sin x \cos x + x) \right) + C \\ &= \frac{1}{2} \sin x \cos x + \frac{1}{2}x + C\end{aligned}$$

**Formel**

$$\begin{aligned}\int \sin x \cdot \cos x \, dx &= \int u \cdot \sin x \cdot \left( -\frac{1}{\sin x} \right) \, dx \\ MR : \left[ u = \cos x, u' = -\sin x \right] \\ &= - \int u \, dx \\ &= -\frac{1}{2}u^2 + C \\ &= -\frac{1}{2} \cos^2 x + C\end{aligned}$$

$$\begin{aligned}\int \sin x \cdot \cos x \, dx &= \int u \cdot \cos x \cdot \left( \frac{1}{\cos x} \right) \, dx \\ MR : \left[ u = \sin x, u' = \cos x \right] \\ &= \int u \, dx \\ &= \frac{1}{2} \sin^2 x + C\end{aligned}$$

$$\begin{aligned}\frac{1}{2} \sin^2 x + C &= \frac{1}{2}(1 - \cos^2 x) + C \\ &= -\frac{1}{2} \cos^2 x + \frac{1}{2} + C \\ &= -\frac{1}{2} \cos^2 x + C\end{aligned}$$

## Oppgave 1

$$1) \int 2 \cdot \cos x \, dx =$$

$$2) \int 6\pi \sin(2\pi x) \, dx =$$

$$3) \int (2x - \cos x) \, dx =$$

## Oppgave 2

$$1) \int 4 \cos(2x) \, dx =$$

$$2) \int \frac{1}{2} \sin(\pi \cdot x) \, dx =$$

$$3) \int -\sin(3x - \pi) \, dx =$$

### Oppgave 3

$$1) \int 2 \cdot \cos(2x - 24) + 12 \, dx =$$

$$2) \int \cos(x) \cdot e^{\sin x} \, dx =$$

$$3) \int x \cdot \cos(x^2 + 1) \, dx =$$

## Oppgave 4

1)  $\int (2x + 1) \cdot \sin x \, dx =$

2)  $\int x \cdot \cos x \, dx =$

## Oppgave 5

$$1) \int \sin x \cdot e^x \, dx =$$

$$2) \int \cos x \cdot e^x \, dx =$$

## Oppgave 6

$$1) \int 2 \cdot \sin^2 x \ dx =$$

$$2) \int \frac{\cos x}{\sin x+1} \ dx =$$

## Oppgave 7

$$1) \int_0^{\pi/2} (\sin x + 2) \, dx =$$

$$2) \int_0^{\pi/2} \cos(x) \, dx =$$

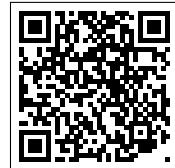
$$3) \int_0^2 \cos(\pi x) \, dx =$$

## Oppgave 8

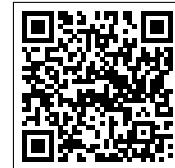
$$1) \int_0^2 \sin\left(\frac{\pi}{3}x\right) dx =$$

$$2) \int_0^\pi \sin x dx =$$

Dette arbeidshefte :



Løsningsforslag :



13. januar 2024