MATX.DK

Integration ved substitution

2. maj 2016

Bestem integraltet

$$\int \frac{2x}{x^2+3}\,dx$$

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$$\int \frac{2x}{x^2+3}\,dx$$

$t = x^2 + 3$ substituer

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Integration ved substitution

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Bestem integraltet

$$\int \frac{2x}{x^2+3}\,dx$$

$$\begin{aligned} t &= x^2+3 && \text{substituer} \\ \frac{dt}{dx} &= 2x && \text{differentier} \end{aligned}$$

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Integration ved substitution

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Bestem integraltet

$$\int \frac{2x}{x^2+3}\,dx$$

$$\begin{aligned} t &= x^2+3 && \text{substituer} \\ \frac{dt}{dx} &= 2x && \text{differentier} \\ \frac{1}{2x}\,dt &= dx && \text{isoler } dx \end{aligned}$$

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Integration ved substitution

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Bestem integraltet

$$\int \frac{2x}{x^2+3}\,dx$$

$$\int \frac{2x}{x^2+3}\,dx = \int \frac{2x}{t}\frac{1}{2x}\,dt$$

$$\begin{aligned} t &= x^2+3 && \text{substituer} \\ \frac{dt}{dx} &= 2x && \text{differentier} \\ \frac{1}{2x}\,dt &= dx && \text{isoler } dx \end{aligned}$$

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$$\int \frac{2x}{x^2+3}\,dx$$

$$\begin{aligned}\int \frac{2x}{x^2+3}\,dx &= \int \frac{2x}{t}\frac{1}{2x}\,dt \\ &= \int \frac{1}{t}\,dt\end{aligned}$$

$$\begin{aligned} t &= x^2+3 && \text{substituer} \\ \frac{dt}{dx} &= 2x && \text{differentier} \\ \frac{1}{2x}\,dt &= dx && \text{isoler } dx\end{aligned}$$

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$$\int \frac{2x}{x^2+3}\,dx$$

$$\begin{aligned}\int \frac{2x}{x^2+3}\,dx &= \int \frac{2x}{t}\frac{1}{2x}\,dt \\ &= \int \frac{1}{t}\,dt \\ &= \ln(t) + C\end{aligned}$$

$$\begin{aligned} t &= x^2+3 && \text{substituer} \\ \frac{dt}{dx} &= 2x && \text{differentier} \\ \frac{1}{2x}\,dt &= dx && \text{isoler } dx\end{aligned}$$

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$$\int \frac{2x}{x^2+3}\,dx$$

$$\begin{aligned}
\int \frac{2x}{x^2+3}\,dx &= \int \frac{2x}{t}\frac{1}{2x}\,dt \\
&= \int \frac{1}{t}\,dt \\
&= \ln(t) + C \\
&= \ln(x^2+3) + C
\end{aligned}$$

$$\begin{aligned}
t &= x^2+3 && \text{substituer} \\
\frac{dt}{dx} &= 2x && \text{differentier} \\
\frac{1}{2x}\,dt &= dx && \text{isoler } dx
\end{aligned}$$