# Calculus I
# Indefinite integral of rational monomial, part 1

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## Example

Integrate.

$$\int 5x^{\frac{3}{2}}\mathrm{d}x \quad = \quad 5$$

## Example

Integrate.

$$\int 5x^{\frac{3}{2}}\,dx \quad = \quad 5\textbf{?}$$

## Example

Integrate.

$$\int 5x^{\frac{3}{2}}\,dx = 5\,\frac{x^{\frac{3}{2}+1}}{\frac{3}{2}+1}$$

## Example

Integrate.

$$\int 5x^{\frac{3}{2}}\,dx = 5\,\frac{x^{\frac{3}{2}+1}}{\frac{3}{2}+1} + C$$

## Example

Integrate.

$$\begin{aligned}\int 5x^{\frac{3}{2}}\,dx &= 5\,\frac{x^{\frac{3}{2}+1}}{\frac{3}{2}+1}+C\\ &= 5\frac{x^{\frac{5}{2}}}{\frac{5}{2}}+C\end{aligned}$$

## Example

Integrate.

$$\begin{aligned}\int 5x^{\frac{3}{2}}\,dx &= 5\,\frac{x^{\frac{3}{2}+1}}{\frac{3}{2}+1}+C\\ &= \frac{5}{\frac{5}{2}}x^{\frac{5}{2}}+C\\ &= 2x^{\frac{5}{2}}+C\end{aligned}$$

## Example

Integrate.

$$\begin{aligned}\int 5x^{\frac{3}{2}}\,dx &= 5\,\frac{x^{\frac{3}{2}+1}}{\frac{3}{2}+1}+C\\ &= \cancel{5}\,\frac{x^{\frac{5}{2}}}{\cancel{\frac{5}{2}}}+C\\ &= 2x^{\frac{5}{2}}+C\end{aligned}$$

## Example

Integrate.

$$\begin{aligned}\int 5x^{\frac{3}{2}}\,dx &= 5\,\frac{x^{\frac{3}{2}+1}}{\frac{3}{2}+1}+C\\ &= \cancel{5}\,\frac{x^{\frac{5}{2}}}{\cancel{\frac{5}{2}}}+C\\ &= 2x^{\frac{5}{2}}+C\end{aligned}$$