Calculus I
Definite integral of linear function, part 2

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Example

$$\begin{aligned}
\int_0^3 (x^3 - 6x)\mathrm{d}x &= \left[\int (x^3 - 6x)\mathrm{d}x\right]_0^3 \\
&= \left[\int x^3\mathrm{d}x - 6\int x\mathrm{d}x\right]_0^3 \\
&= \left[\frac{x^4}{4} - 6\frac{x^2}{2}\right]_0^3 \\
&= \left(\frac{1}{4}\cdot 3^4 - 3\cdot 3^2\right) - \left(\frac{1}{4}\cdot 0^4 - 3\cdot 0^2\right) \\
&= \frac{81}{4} - 27 - 0 + 0 = -\frac{27}{4}.
\end{aligned}$$