Factsheet: Laws of indices

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Summary

A list of laws of indices.

*The associated study guide for this factsheet is* [*Guide: Laws of indices*](../studyguides/lawsofindices)*. If you would like to know more about these, please read the guide.*

Throughout this factsheet, $a,b$ are positive real numbers, $r$ and $s$ are real numbers, and $n$ is a positive whole number.

## Laws of indices

**Law 1**: $ a^{r}·a^{s}=a^{r+s}$.

**Law 2**: $ \frac{a^{r}}{a^{s}}=a^{r−s}$.

**Law 3**: $ \left(a^{r}\right)^{s}=a^{r·s}$.

**Law 4**: If $a$ is non-zero, then $a^{0}=1$.

**Law 5**: $ a^{−r}=\frac{1}{a^{r}}$

**Law 6**: $ a^{1/n}=\sqrt[n]{a}.$

**Law 7**: $ a^{r}⋅b^{r}=\left(ab\right)^{r}$.

**Law 8**: $ \frac{a^{r}}{b^{r}}=\left(\frac{a}{b}\right)^{r}$.

**Law 9**: $ a^{1/n}⋅b=\sqrt[n]{a⋅b^{n}}$.

**Law 10**: $ \sqrt[n]{a⋅b}=\sqrt[n]{a}⋅\sqrt[n]{b}$.

[For more on the subject, please go to Guide: Laws of indices](../studyguides/lawsofindices.qmd)

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v1.0: created in 05/24 by tdhc.

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