# Very simple book with mathematical formulas

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# Chapter 1. JLaTeXMath

The Java package JLaTeXMath combining with FOP gives the possibility to write LaTeX commands in Docbook.

This example has been written in using the CM Unicode fonts available at http://sourceforge.net/projects/cm-unicode/ .

For example :

$$\phi_n(\kappa) = \frac{1}{4\pi^2\kappa^2}\int_0^{\infty} \frac{\sin(\kappa R)}{\kappa R}\frac{\partial}{\partial R}\left[R^2\frac{\partial D_n(R)}{\partial R}\right]dR$$

We can use an example block :

Example 1.1.

$$\det\begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & \ddots & & \vdots \\ \vdots & & \ddots & \vdots \\ a_{n1} & \cdots & \cdots & a_{nn} \end{bmatrix} \stackrel{\text{def}}{=} \sum_{\sigma\in\mathfrak{S}_n} \varepsilon(\sigma)\prod_{k=1}^{n} a_{k\sigma(k)}$$

The formulas can be in displaystyle $\displaystyle\sum_{n=1}^{+\infty}\frac{1}{n^2} = \frac{\pi^2}{6}$ or in textstyle $\sum_{n=1}^{+\infty}\frac{1}{n^2} = \frac{\pi^2}{6}$.

Several centered formulas with gather environment :

$$ax + b = 0$$
$$ax^2 + bx + c = 0$$
$$ax^3 + bx^2 + cx + d = 0$$

Several formulas with flalign environment :

$$\begin{aligned} 10xy^2 + 15x^2y - 5xy &= 5\big(2xy^2 + 3x^2y - xy\big) = \\ &= 5x\big(2y^2 + 3xy - y\big) = \\ &= 5xy(2y + 3x - 1) \end{aligned}$$

Several formulas with split environment :

$$\begin{aligned} 10xy^2 + 15x^2y - 5xy &= 5\big(2xy^2 + 3x^2y - xy\big) = \\ &= 5x\big(2y^2 + 3xy - y\big) = \\ &= 5xy(2y + 3x - 1) \end{aligned}$$

Splitting a long formula on several lines with multline environment :

$$\begin{aligned} (1+x)^n = 1 + nx + \frac{n(n-1)}{2!}x^2 + \\ + \frac{n(n-1)(n-2)}{3!}x^3 + \\ + \frac{n(n-1)(n-2)(n-3)}{4!}x^4 + \dots \end{aligned}$$