Sample document

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Introduction

This is a sample LaTeXdocument intended to show what plasTeXcan do. It is made of random excerpts of mathematical texts.

1 Basic typesetting

Of course you can type paragraphs containing some mathematics, such as the following one.

If $G = \mathrm{GL}_2$ then $G_{\mathrm{ad}} = \mathrm{PGL}_2$ and so, as above, $G_1 = \mathrm{SL}_2$. Now G_2 is the set of $(g, h) \in \mathrm{SL}_2 \times \mathrm{GL}_2$ with $g = h$ in PGL_2, so $h = \lambda g$ for some unique $\lambda \in \mathbf{G}_m$ and $G_2 = \mathrm{SL}_2 \times \mathbf{G}_m$, with the obvious map to GL_2 sending $\mathbf{G}_m$ into the centre (or perhaps its inverse depending on how one is thinking about things, but this doesn't matter). The subgroup μ_2 is embedded diagonally of course, because it's the kernel of the map $G_2 \to G$. Finally we push out via $\mu_2 \to \mathbf{G}_m$ and this gives us $\mathrm{SL}_2 \times \mathbf{G}_m \times \mathbf{G}_m$ modulo the subgroup of order 2 with non-trivial element $(-1, -1, -1)$. But there's an automorphism of $\mathbf{G}_m \times \mathbf{G}_m$ sending $(-1, -1)$ to $(-1, 1)$ (namely, send (x, y) to (x, xy)) so again $\tilde{G}$ is just $G \times \mathbf{G}_m$.

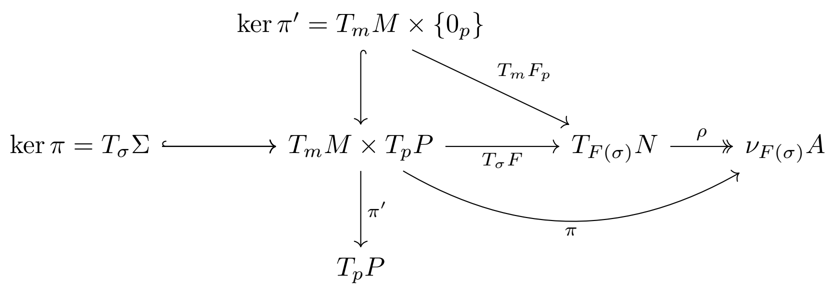
You can also use displayed formulas such as:

$$\int_{I \times \Sigma} \Phi^* \omega = \int_I \left(\int_{\Phi_t(\Sigma)} \iota_X \omega \right) dt.$$

and refer to displayed formulas such as Equation 1 below.

$$\int_M d\omega = \int_{\partial M} \omega \tag{1}$$

Commutative diagrams using `tikz-cd` are supported as well.



2 Theorems and proofs

You can state and prove results, and refer to them, for instance Lemma 1 below.

Lemma 1. *Splittings of* $0 \to \mathbf{G}_m \to \tilde{G} \to G \to 0$ *canonically biject with twisting elements for* G.

Proof. To give a splitting is to give a map $\tilde{G} \to \mathbf{G}_m$ such that the composite $\mathbf{G}_m \to \tilde{G} \to \mathbf{G}_m$ is the identity; then the induced map $\tilde{G} \to G \times \mathbf{G}_m$ is an injection with trivial kernel so is an isomorphism for dimension reasons. If $\chi : \tilde{G} \to \mathbf{G}_m$ is such a character then χ gives rise to an element of $X^*(\tilde{T})$ which is Galois-stable, whose image in $\mathbf{Z}$ is 1, and which pairs to zero with each coroot (because χ factors through the maximal torus quotient of $\tilde{G}$). Conversely to give such a character is to give a splitting. Now one checks that $\theta - \chi$ has image in $\mathbf{Z}$ equal to zero so gives rise to an element of $X^*(T)$ which is Galois-stable, and pairs with each simple coroot to 1—but this is precisely a twisting element for G. Conversely if t is a twisting element for G then $\theta - t$ gives a splitting of the exact sequence. □

3 Enumerations and tables

You can use lists such as:

- $(\Phi \circ \Psi)_* X = \Phi_* \Psi_* X$
- $(\varphi \circ \psi)^* \alpha = \psi^* \varphi^* \alpha$
- $\varphi^* d\alpha = d\varphi^* \alpha$
- $\Phi^*(\mathcal{L}_X \alpha) = \mathcal{L}_{\Phi_*^{-1} X} \Phi^* \alpha$
- $\Phi^*(i_X \alpha) = i_{\Phi_*^{-1} X} \Phi^* \alpha$

and tables, possibly inside a figure environment such as Figure 1.

	(1)	(12)	(123)
χ_{triv}	1	1	1
χ_{sgn}	1	-1	1
χ_{std}	2	0	-1

Figure 1: Character table for S_3