Grothendieck's Riemann–Roch Doodle (English Rendering)

Figure 1: Original doodle (scan/photo).

English transcription and diagram

Riemann–Roch theorem: the latest craze — the diagram.

$$\begin{array}{ccc} K'(X) & \xrightarrow{f_!} & K'(Y) \\ \downarrow{\scriptstyle \tau} & & \downarrow{\scriptstyle \tau} \\ \mathrm{Gr}\ K'(X) & \xrightarrow[f_*]{} & \mathrm{Gr}\ K'(Y) \\ \downarrow{\scriptstyle \mathrm{ch}} & & \downarrow{\scriptstyle \mathrm{ch}} \\ \mathrm{Gr}\ H^*(X) \otimes \mathbb{Q} & \xrightarrow[f_*]{} & \mathrm{Gr}\ H^*(Y) \otimes \mathbb{Q} \end{array}$$

i.e. commutative!

To give this statement about $f\colon X \to Y$ even an approximate meaning, I had to abuse the audience's patience for almost two hours. In black and white (in Springer's *Lecture Notes*) it probably runs to something like 200–500 pages.

A striking example of how our drive for knowledge and discovery is increasingly getting lost in a life-detached logical delirium, while life itself is "going to hell" in a thousand ways — and is threatened by irreversible destruction. High time to change our course!

— Alexander Grothendieck

Notes (optional)

- The diagram above is a clean LaTeX rendering inspired by the doodle; the exact labels in the scan are stylized and partially ambiguous.
- If you want this to compile *as-is*, place the image file `Grothentick-RR.webp` in the same folder as this `.tex` file.
- If your LaTeX setup cannot include `.webp` images, convert it to PNG or PDF and update the filename.