<div align="center">

Chapter 1

An Example Chapter

</div>

In this chapter we demonstrate the features of the preamble.tex file. Section 1.1 covers the use of the example environment and what mathematics looks like, while Section 1.2 shows the Algorithm environment and a quotation.

1.1 Example environment and mathematics layout

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

▼ **Example 1.1.1.**

Let $f = yx - x^2 + x$ and $g = 2y + x + 1 \in \mathbb{Q}[x, y]$. We use degree lexicographic order with $y > x$. Dividing f by g gives us:

$$
\begin{array}{r}
yx \quad - \; x^2 + \; x \\
\hline
2y + x + 1 \,\big)\; 2y^2x \; - \; yx^2 \; + \; 3yx
\end{array}
$$

In reduction notation this division looks as follows:

$$
f \xrightarrow{\;g\;} -2yx^2 + 2yx \xrightarrow{\;g\;} 2yx + x^3 + x^2 \xrightarrow{\;g\;} x^3 - x.
$$

Math numbers are set 0123456789, normal numbers are set 0123456789.

1.2   Algorithm and a quotation

Algorithm 1.2.1 — *Multivariate Division Algorithm*

Input: $f, f_1, \dots, f_t \in \mathbb{F}[x_1, \dots, x_n]$ **with** $f_i \neq 0$ $(1 \leq i \leq t)$.
  Output: $u_1, \dots, u_t, r \in \mathbb{F}[x_1, \dots, x_n]$ **such that** $f = u_1 f_1 + \dots + u_t f_t + r$, r **is reduced with respect to** $\{f_1, \dots, f_t\}$ **and** $\mathrm{lp}(f) = \max(\mathrm{lp}(f_i), \mathrm{lp}(u_i), \mathrm{lp}(r))$.
  Initialisation: $u_i := 0$, $r := 0$, $h = f$.
  While $h \neq 0$ **Do**
  Loop

❝ Alice was beginning to get very tired of sitting by her sister on the bank, and of having nothing to do: once or twice she had peeped into the book her sister was reading, but it had no pictures or conversations in it, 'and what is the use of a book,' thought Alice 'without pictures or conversation?'