1. The problem statement goes here.

Proof. This is the solution.

(a) This

(b) is an

(iii) enumeration

(4) environment.

This is centered text.

To *display* `centered` **math** *text*, ***try*** [1]

$$(\forall x)(\exists y)(x = y).$$

Some useful symbols:

$$\in, \{X, Y\}, \subseteq, \subsetneq, \supseteq, X \cup Y, X \cap Y, \mathcal{P}(X), \forall, \exists, \wedge, \vee, \neg, \rightarrow, \leftrightarrow, \alpha, \beta, \gamma, \delta, 2^{\aleph_0}$$

If you want to display a line and "tag" it with a symbol, try this:

$$0 \rightarrow M' \xrightarrow{\alpha} M \xrightarrow{\beta} M'' \rightarrow 0. \tag{‡}$$

Later, to refer to this line, write "By (‡), we deduce ...". □

This is one way to write a system of linear equations:

$$\begin{aligned} x+2y+3z &= 1 \\ x-\ y+\ z &= \frac{5}{2} \\ 3x-2y+\ z &= 5 \end{aligned}$$

Here is the same system written in matrix form:

$$\begin{bmatrix} 1 & 2 & 3 \\ 1 & -1 & 1 \\ 3 & 2 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ \frac{5}{2} \\ 5 \end{bmatrix} \quad \text{or} \quad \begin{pmatrix} 1 & 2 & 3 \\ 1 & -1 & 1 \\ 3 & 2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 1 \\ \frac{5}{2} \\ 5 \end{pmatrix}$$

[1] These fonts, in order, are roman, *slant*, `teletype`, **bold**, *italic*, ***bold italic***