# 1 Basic Mathematics

This session covers typesetting mathematics in LaTeX. This text contains two mathematical expressions: $2^2 + 2^2 = 8$ and $2 \times 2 = 4$

$$\cos^2\theta + \sin^2\theta = 1$$

The union of two sets A and B is denoted as $A \cup B = \{x \in A \text{ or } x \in B\}$

We are learning fractions $\frac{a}{\frac{b}{c}} \times \frac{\frac{d}{e}}{f} \geq 1$ which is good.

$$\frac{a}{\frac{b}{c}} \times \frac{\frac{d}{e}}{f} \geq 1$$

$$\left\{ \left(\frac{a}{b}\right) + \left(\frac{c}{d}\right) \right\}$$

$$\sum_{i=a}^{b} g(i) = 0, \text{for } b < a$$

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}$$

# 2 More in Mathematics

$\int_2^4$ $lim_{2 \to 4}$

$$\int_0^\infty f(x)dx$$

$$\lim_{x \to c} f(x) = L$$

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} + \begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix} = \begin{bmatrix} 6 & 8 \\ 10 & 12 \end{bmatrix}$$

# 3 Equations

$$3x + 5y = 2 \tag{1}$$

$$5x + 8y = 3 \tag{2}$$

$$x^2 - y^2 = (x + y)(x - y) \tag{3}$$

$$
\begin{aligned}
3x - 6 &= 9 \\
3x &= 9 + 6 \\
x &= \frac{9 + 6}{3} \\
x &= 5
\end{aligned}
\tag{4}
$$