

**Exercise 3.2.** What is an example of a proof with mathematical content?

**Solution:**

*Proof.* If you want to include math in a sentence, you use  $\$$ . For example (see latex file),  $\int x = \frac{1}{2}x^2 + C$ . If you want to display math (centered on a new line), use  $\$\$$ . For example (see latex file),

$$\sum_{i=1}^{100} i = 5050.$$

Next is an example of the `align` environment:

$$\begin{aligned} \sum_{i=1}^{k+1} i &= \left( \sum_{i=1}^k i \right) + (k+1) \\ &= \frac{k(k+1)}{2} + k+1 && \text{(by inductive hypothesis)} \\ &= \frac{k(k+1) + 2(k+1)}{2} \\ &= \frac{(k+1)(k+2)}{2} \\ &= \frac{(k+1)((k+1)+1)}{2}. \end{aligned}$$

□