This document shows how to write theorems and proofs, The specific example is a theorem about rational numbers:

Theorem 1. *If q is a rational number and n is an integer, then $q+n$ is rational.*

Proof. We assume that q is a rational number and n is an integer, and will show that $q + n$ must be rational. Since q is rational, we can write $q = \frac{a}{b}$ where a and b are integers and $b \neq 0$. We also observe that $n = \frac{nb}{b}$. Therefore

$$q + n = \frac{a + bn}{b}$$

Since integers are closed under addition and multiplication, $a + bn$ is an integer. Furthermore, b is a non-zero integer, and so $\frac{a+bn}{b}$ is a rational number. We have now shown that if q is a rational number and n is an integer, that $q + n$ is rational. □