Proposition 2.11.

(i) *For all* $m \in \mathbb{Z}$, $-(-m) = m$.

(ii) $-0 = 0$.

Proof. Part (i) follows from

$$m + (-m) = 0 \ ,$$

which says that $-m$ is the additive inverse of m, but it also says that m is the additive inverse of $-m$, which is precisely what we needed to show.

Part (ii) follows with exactly the same argument from the equation $0 + 0 = 0$. □