Proof:

By the definision of limit, given

Then

$$(\forall \epsilon > 0)(\exists n \in \mathcal{Z})(m \geq n)|a_n - L < \epsilon|$$

Since $M \geq 0$

So

$$(\forall M\epsilon > 0)(\exists n \in \mathcal{Z})(m \geq n)|Ma_n - ML < M\epsilon|$$

By the definision of limit, this proves the result.