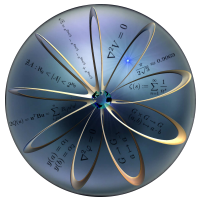

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proof of Nakayama's lemma

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(This proof was taken from [**?**].)

If M were not zero, it would have a simple quotient, isomorphic to $R/\mathfrak{m}$ for some maximal ideal $\mathfrak{m}$ of R. Then we would have $\mathfrak{m}M \neq M$, so that $\mathfrak{a}M \neq M$ as $\mathfrak{a} \subseteq \mathfrak{m}$.

References

[1] Serre, J.-P. *Local Algebra.* Springer-Verlag, 2000.