Introduction

Note. circularity*: Using an advanced fact to prove a more elementary fact, and then later using the elementary fact to prove the advanced fact. When do a mathematics proofs, one should avoid* circularity.

Note. *From a logical point of view, there is no difference between a lemma, proposition, theorem, or corollary - they are all claims waiting to be proved. However, we use these terms to suggest different levels of importance and difficulty. A lemma is an easily proved claim which is helpful for proving other propositions and theorems but is usually not particularly interesting in its own right. A proposition is a statement which is interesting in its own right. A theorem is a more important statement than a proposition which says something definitive on the subject and often takes more effort to prove than a proposition or lemma. A corollary is an immediate consequence of a proposition or theorem that was proven recently.*