Math 304 Homework 3

Your name goes here

Due September 21, 2018

In the following theorem, fill in the blank, and then complete the proof.

Theorem E. Let $m, n \in \mathbb{N}$, and let $a \in \mathbb{Z}$. Let $[a]_m$ denote the equivalence class of a under $\equiv_m$, and $[a]_n$ the equivalence class of a under $\equiv_n$. Then $[a]_m \subseteq [a]_n$ if and only if __________.

Proof. $\square$

A relation $\sim$ on a set S is said to be *circular* provided that for all $a, b, c \in S$, if $a \sim b$ and $b \sim c$, then $c \sim a$.

Theorem F. A relation $\sim$ on a set S is an equivalence relation if and only if $\sim$ is reflexive and circular.

Proof. $\square$