This document will contain definitions and other trivial notes.

1 'Trivial' definitons

Definiton 1.1 (Monoid)**.** A semi-group with identity.

Definiton 1.2 (Inclusion Map)**.** A map $f : A \mapsto B$ that takes $x \in A$ to $x \in B$

Definiton 1.3 ((left) G-Set)**.** Let G be a group, and X a set.Then, f is a left group action on of G on X, or X is a left G-Set iff

$$f : G \times X \mapsto X : \forall x \in X \ , \ f(e_G, x) = x \text{ and } \forall a, b \in G \ , \ f(ab, x) = f(a, f(b, x))$$