

# Grothendieck's Galois Theory

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## 1 Section 1

**Definition 1.1.** In a category  $\mathcal{C}$  an arrow  $f: X \rightarrow Y$  is a **strict epimorphism** if it is the joint coequalizer of all the arrows it equalizes. This means that any arrow  $g: X \rightarrow Z$  such that  $g \circ x = g \circ y$  for any  $x, y: C \rightarrow X$  such that  $f \circ x = f \circ y$  there exists a unique arrow  $h: Y \rightarrow Z$  such that  $h \circ f = g$ . Refer to Figure 1.1.

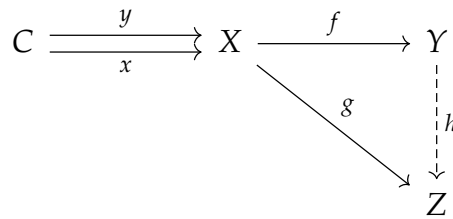


Figure 1.1

**Remark 1.2.** Strict epimorphisms are coequalizers, thus epimorphisms (as the name implies).

**Remark 1.3.** If an arrow is both a strict epimorphism and a monomorphism then it is an isomorphism.