

MAA 4211, Fall 2001—Homework # 1 non-book problems

Hand in the problems below.

B1. Find a formula expressing the cardinality of the cartesian product of two finite sets X, Y in terms of the cardinalities of X and Y . Justify your answer.

B2. Let X, Y , and Z be sets and let $f : X \rightarrow Y$, $g : Y \rightarrow Z$ be functions.

(a) Show that if f and g are bijective, then so is $g \circ f$.

(b) Suppose $g \circ f$ is bijective. Does it follow that f and g are bijective? If your answer is “yes”, prove it; if “no”, give a counterexample.