MATH 147 Review: Surjectivity and Injectivity

Facts to Know

Surjective

Injective

Bijective

Examples

1. Consider two sets $X = \{1, 2, 3, 4\}$ and $Y = \{-8, 0, 20\}$. Let f be a surjective function from X to Y such that for any two elements x_1 and x_2 of X, if $x_1 < x_2$, then $f(x_1) \leq f(x_2)$. What is the minimum possible value of $f(4)$?

2. A function f maps the elements of $A = \{14, 16, 18, 20\}$ to elements of $B = \{55, 66, 77, 88, 99\}$. How many of the possible maps f are not injective?