

Name: _____

Lecture 24, class activity. Well-defined, Part II.

In each case, you are given a set X , an equivalence relation X/\sim , and a function $f: X \rightarrow X$. Determine whether or not $\tilde{f}: X/\sim \rightarrow X/\sim$ is well defined.

1. $X = \mathbb{Z}$, $x \sim y \iff x \equiv y \pmod{5}$, $f(x) = x^3 + 2x + 1$.

2. $X = \mathbb{R}$, $x \sim y \iff \text{floor}(x) = \text{floor}(y)$, $f(x) = x + 3$.

3. $X = \mathbb{R}$, $x \sim y \iff \text{floor}(x) = \text{floor}(y)$, $f(x) = x^2$.

4. $X = \mathbb{R}$, \sim generated by the partition $\mathbb{N} = S \cup T$, $f(x) = x^2$.