

Skill Mastery Quiz 11
Communicating in Math (MTH 210-01)
Winter 2020

Name:

S3-3 Let $f : \mathbb{Z} \rightarrow \mathbb{Z}$ be defined by $f(m) = m + 3$.

1. State the domain, codomain, and range of f . (Clearly state which one is which.)

2. Find the image(s) of -1 under f .

3. Find the preimage(s) of 4 .

S4-2 Let A and B be sets. Carefully complete the definitions of the following terms. (Note: “no collisions” and “range=codomain” are helpful ways to think about these, but they are NOT the definitions.)

1. A function $f : A \rightarrow B$ is injective provided that...

2. A function $f : A \rightarrow B$ is surjective provided that...

3. A function $f : A \rightarrow B$ is bijective provided that...

S6-2 Let $x, y \in \mathbb{Z}$ and $n \in \mathbb{N}$. State the definitions of the following:

1. $x \mid y$ (for nonzero r)

2. $x \equiv y \pmod{n}$.

Give an example of integers x and y such that $x \nmid y$ and $y < 0$.

S5-1 For all $a, b \in \mathbb{Z}$ say $a \sim b$ if and only if $a \mid b$. Is \sim an equivalence relation? Explain.