

Discrete Math Quiz 2

Name: _____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**. Show your work, and give adequate explanations.

1. Let $F: \mathbb{R} \rightarrow \mathbb{R}: x \mapsto x^2$ be the squaring function.

(a) What is the image of F ?

$$\{x \in \mathbb{R} \mid x \geq 0\}.$$

(b) What is the coimage of F ?

$$\{y \in \mathcal{P}(\mathbb{R}) \mid (\exists x)(y = \{x, -x\})\}.$$

2. Give an example of a function $G: \mathbb{R} \rightarrow \mathbb{R}$ that is

(a) Injective, but not surjective.

$$\text{One possible answer: } G(x) = e^x.$$

(b) Surjective, but not injective.

$$\text{One possible answer: } G(x) = x^3 - x.$$