

QUIZ 3: CHAPTER 4 MARCH 28

Name: _____

- All answers should be fully justified.
- Complete this quiz without any aids, including the text or your peers.

(1) True or false: For every $x \in \mathbb{Q}$, $2 \lfloor x \rfloor = \lfloor 2x \rfloor$. Prove your answer.

(2) True or false: If $f : A \rightarrow B$ and $g : B \rightarrow C$ are both surjective, then $g \circ f$ is surjective. Prove your answer.

- (3) Prove that for every $n \in \mathbb{Z}$, $\left\lfloor \frac{n}{2} \right\rfloor + \left\lceil \frac{n}{2} \right\rceil = n$.
- (4) Define $f : \{-1, 0, 1, 2, 3, 4\} \rightarrow \{0, 1, 2, 3, 4\}$ by $f(x) = |x - 2|$.
- (a) Draw an arrow diagram for f .
 - (b) Give the set representation of f .
 - (c) Find the range of f .
 - (d) Is f onto? (Why or why not?)
 - (e) Is f one-to-one? (Why or why not?)