

MATH 243 – Mathematical Structures
Quiz 7 – November 10, 2017

Your Name: _____

Directions

Do all work and answer all questions on this sheet. (Use the back if you need more space.)
There are 30 possible points, distributed as indicated.

A) (15) Let

$$f : \{\text{triangles in } \mathbb{R}^2\} \rightarrow (\mathbb{R}^+)^3$$

be the mapping that sends a triangle in the coordinate plane with vertices labeled as in $\triangle ABC$ to the ordered triple of positive numbers given by the lengths of its sides, in the order (AB, AC, BC) . For instance, if T is the triangle with vertices $A = (0, 0)$, $B = (3, 0)$, $C = (0, 4)$, then $f(T) = (3, 4, 5)$. Does f have an *inverse mapping*? Why or why not?

B) (15) Let $R \subset A \times A$ be a relation. What does it mean to say that R is an *equivalence relation*?