FALL 2019: MATH 558 QUIZ 8

Each question is worth 5 points.

1. Let R be a Euclidean domain. State the theorem concerning uniqueness of factoring non-zero, non-unit elements.

Solution. Let R be a Euclidean domain. Suppose $p_1 \cdots p_r = q_1 \cdots q_s$, where each p_i, q_j in R is an irreducible element. Then r = s and after re-indexing the $q_j, q_i = u_i p_i$, for units $u_i \in R$, for all $1 \le i \le r$.

2. Let R be a Euclidean domain. State the theorem concerning the existence of factoring non-zero, non-unit elements.

Solution. Let R be a Euclidean domain. There every non-zero, non-unit element in R can be written as a product of irreducible elements.