

## Mathematics 300

### Quiz 27

Name: \_\_\_\_\_

*You must show your work to get full credit.*

Recall that a positive integer  $p$  is ***prime*** if and only if  $p \geq 2$  and the only positive divisors of  $p$  are 1 and  $p$ .

**Theorem.** *Every integer  $n$  is a product of primes.*

1. Prove this.

Theorem. *There are infinitely many primes.*

**2.** Prove this.