Quiz 2

Student ID Number: Name _____

Math 180B, 3PM

Please justify all your answers April 18, 2019

Please also write your full name on the back

1. Find a generator for the group of units mod 9, $(\mathbb{Z}/9\mathbb{Z})^\times$.

2. Prove that the ring $\mathbb{Z}[\sqrt{D}]$, where D is a square-free integer, is an integral domain, i.e. if $xy = 0$ for $x, y \in \mathbb{Z}[\sqrt{D}]$, then $x = 0$ or $y = 0$. *Hint: Suppose* $(a + b\sqrt{D})(c + d\sqrt{D}) = 0$. *Take the norm of both sides. What does this tell you about* a, b, c, d*?*