Quiz 2

Student ID Number: Name ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Math 180B

Please justify all your answers   April 23 - April 24, 2020

Please also write your full name on the back

1. Let $\frac{a}{b} < \frac{c}{d}$ be consecutive fractions in the Farey sequence. Show that

$$\left| \frac{c}{d} - \frac{a}{b} \right| \geq \frac{1}{n(n-1)}.$$

2. Show that the equation $x^2 + y^2 = 3z^2$ has no solutions in integers where $z \neq 0$. *Hint: Suppose it has solutions. Consider the solution with minimal $z > 0$.*