PORTFOLIO PROOFS A

Instructions. Choose one of the following statements and prove it. Use LaTeX to write your proof nicely. Drop your proof (both pdf and tex) in your OneDrive folder by the end of the day Wednesday, October 13.

1. Let $x \in \mathbb{R}$. If $x > 0$, then $x + \dfrac{1}{x} \geq 2$.

2. Suppose $a \in \mathbb{Z}$. If a is odd, then $8 \mid (a^2 - 1)$.

3. Let $a, b, c, \in \mathbb{Z}$. Suppose a and b are not both zero and $c \neq 0$. Prove that $c \cdot \gcd(a, b) \leq \gcd(ac, bc)$.

Date: October 7, 2021.