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.

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 $c \cdot \gcd(a, b) \leq \gcd(ac, bc)$.