

Math 255 - Spring 2022
Explorations on primes
5 points

This homework contains some problems which I hope you will find thought-provoking. You are encouraged to submit your thoughts and explorations on these problems, even if you cannot write a “formal proof.” Proofs and counter-examples are also welcome, of course. This homework is worth 5 points.

1. Let d be any integer. If $d|ab$, does it follow that $d|a$ or $d|b$?

Either prove that this is always the case, or give an example of a, b and d such that $d|ab$ but d does not divide a and d does not divide b .

2. Let $n \geq 1$ be an integer. Is it possible for a prime p to divide both n and $n + 1$?

Either give an example of p and n such that p divides n and $n + 1$, or prove that this can never happen.