*CS330 Homework 2**

Chapter 2: Proofs

Questions [20 = 5 * 4 points total]

Prove the following statements. Show and explain ALL your work. Unless otherwise specified, give direct proofs.

1. The sum of two even integers is always even.

2. State the contrapositive of (for all integers n, if n^2 is odd, then n is odd) and prove it.

3. Prove that if the sum of the digits of a 3-digit number n is divisible by 9, then n is divisible by 9.

4. Prove by contradiction that the product of two odd numbers is odd.

5. Prove that the product of two rational numbers is rational.

---

* Some material from MATH230 Dr. Robert Ellis IIT-AMAT, zyBooks Disc. Math., and Disc. Math. and its Appl., Rosen (7th Ed.) is included under the academic/nonprofit Fair Use exception of US Copyright Law. This document must NOT be distributed beyond participants in IIT's CS330.