

Homework Assignment 3

CS 2233

Sections 001 and 002

Due: 11:59pm Friday, February 9

Problem 1. [10 points]

Complete all participation activities in zyBook sections 2.1, 2.2, 2.4-2.6.

Problem 2. [10 points] Prove that if a , b , and c are odd integers, then $a + b + c$ is an odd integer.

Problem 3. [30 points] Recall that a rational number can be put in the form $\frac{p}{q}$ where p and q are integers and $q \neq 0$. Prove the following for any rational number, x :

- a. [10 points] If x is rational, then $x - 5$ is rational
- b. [10 points] If $x - 5$ is rational, then $x/3$ is rational
- c. [10 points] If $x/3$ is rational, then x is rational

Problem 4. [20 points]

Consider the statement: For all integers m and n , if $m - n$ is odd, then m is odd or n is odd.

- a. [10 points] Prove the statement using a proof by contrapositive
- b. [10 points] Prove the statement using a proof by contradiction