ASHESI

Discrete Structures and Theory (Spring 2023)
Week 6 Discussion
Date: 24/02/2023

Exercise 1:
Use a direct proof to show that the sum of two even integers is even.

Exercise 2
Use a direct proof to show that the product of two odd numbers is odd.

Exercise 3:
Prove that if $m + n$ and $n + p$ are even integers, where m, n, and p are integers, then $m + p$ is even.

Exercise 4:
Prove that if x is rational and $x \neq 0$, then $1/x$ is rational.

Exercise 5:
Let n be an integer. Show that if $n^3 + 5$ is odd, then n is even using
a) a proof by contraposition.
b) a proof by contradiction.

Exercise 6:
Let n be an integer. Prove that n is odd if and only if $5n + 6$ is odd.