CSCI 281, Assignment 08 – Contrapositive and Contradiction(15 points)

1. Consider the following claim.

   Claim: For two integers a and b, if $a + b$ is odd then a is odd or b is odd.

   (a) (1 point) If we consider the claim as the implication $P \implies Q$, which statement is P and which is Q?

   (b) (1 point) Write the negations $\neg P$ and $\neg Q$.

   (c) (1 point) Write the contrapositive of the claim.

   (d) (2 points) Prove the contrapositive of the claim.

2. (5 points) Use contraposition (proof by contrapositive)to prove the following claim.

   Claim: If n is a positive integer such that $n^2 > 25$, then $n > 5$.

3. (5 points) Use proof by contradiction to prove the following claim:

   Claim: There are not two integers a and b such that $88a + 44b = 1$