California State University, Sacramento
College of Engineering and Computer Science

Computer Science 28: Discrete Mathematics

Spring 2017 – Assignment #2 – Proof

About

Homework will be due the next class after the weekend. It should be ready to turn-in at the beginning of lecture.

If you cannot turn-in your work in class, then you may submit your homework at Riverside Hall 3018 instead, but you must time-stamp and write "Cook CSc 28" across the top of your submission.

Simple Proofs

1. Prove the following (show your work):

   *If **a** is odd, **b** is odd, and **c** even then **a** × **b** × **c** is even*

2. Prove the following (show your work):

   *If **a** is divisible by 6 and **b** is divisible by 12 then **a** × **b** is divisible by 9.*

Quantified Logic

3. Convert the following statement to a quantified expression, use a logical equivalence, and convert the answer back to English. You will end up with the exact same concept.

   No one likes the Last Airbender Movie.

4. Convert the following statement into a quantified expression:

   Simplify the following Quantified Statement. The result should have **no** negation symbols.

   $\neg \forall_x \exists_x (\neg R(x) \wedge T(x))$

Induction

5. Prove the following using induction (show your work):

   ***If** $x \geq 2$ **then** $2 + 4 + 6 + \ldots + 2n = n(n+1)$*