



California State University, Sacramento  
College of Engineering and Computer Science

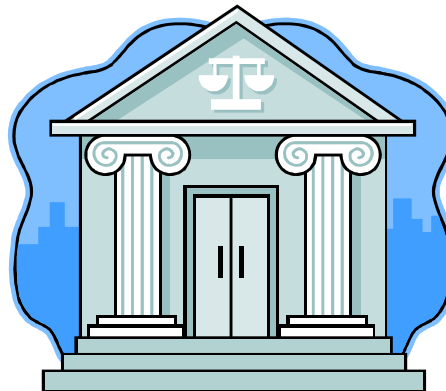
Computer Science 28: Discrete Mathematics

Assignment #3 – 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): (10 points)

*If  $a$  is odd,  $b$  is odd, and  $c$  even then  $a \times b \times c$  is even*

2. Prove the following (show your work): (10 points)

*If  $a$  is divisible by 2 and  $b$  is divisible by 5 then  $a \times b$  is divisible by 10.*

## Quantified Logic

1. Convert the following statement to a quantified expression, negate it, and convert the answer back to English. You will end up with the exact opposite concept. (5 points)

*All cats are asleep.*

2. Convert the following statement into a quantified expression: (5 points)

*Everyone, who has seen Deadpool, likes chimichangas .*

3. Simplify the following Quantified Statement. The result should have **no** negation symbols. (15 points)

$$\neg \forall x \exists x (\neg G(x) \wedge H(x))$$

## Induction

4. Prove the following using induction (show your work- both steps): (15 points)

$$\text{If } x \geq 2 \text{ then } 2 + 4 + 6 + \dots + 2n = n(n + 1)$$