

## CS200 Fall 2015 Induction Worksheet

1. Prove by induction that for all  $n = 1, 2, 3, \dots$

$$\frac{1}{2^1} + \frac{1}{2^2} + \dots + \frac{1}{2^n} = 1 - \frac{1}{2^n}$$

a) prove the base

b) what do you need to prove for the step?

c) prove the step

2a) For which integer values does the following inequality hold:  $2^n > n^2$

b) Prove the inequality by induction