CS200 Fall 2016 Induction Worksheet

1. Prove by induction that for all n = 1, 2, 3, …

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

a) Prove the base

b) What do you need to assume to prove the step?

c) Prove the step

2a) For which integer values does the following inequality hold: $\mathbf{n! > 2^n}$

b) Prove the inequality by induction