In-class, Week 5, day 1

Section 5.1, Problem 18: Let $P(n)$ be the statement that $n! < n^n$, where n is an integer greater than 1.

a. What is the statement $P(2)$?

b. Show that $P(2)$ is true, completing the basis step of the proof.

c. What is the inductive hypothesis?

d. What do you need to prove in the inductive step?

e. Complete the inductive step.

f. Explain why these steps show that this inequality is true whenever n is an integer greater than 1.

Section 5.1, Problem 32: Prove that 3 divides n^3+2n whenever n is a positive integer.