

Fall 2015, Math 431: Week 1 Preliminary Problems
Due: Thursday, September 3rd, 2015
Induction and the Pigeon-hole Principle

Preliminary problems. The problems below should be completed before class on Thursday.

(P1) State a version of the principal of mathematical induction that can be used to prove a given statement $P(n)$ holds for all positive *even* integer values of n .

(P2) Verify that the expression

$$\frac{1}{\sqrt{5}} \left(\frac{1 + \sqrt{5}}{2} \right)^n - \frac{1}{\sqrt{5}} \left(\frac{1 - \sqrt{5}}{2} \right)^n$$

evaluates to an integer when $n = 3$.