Fall 2019, Math 579: Preliminary Problem Set 1
Due: Thursday, August 29th, 2019
Induction and the Pigeon-Hole Principle

Preliminary problems. These problems should be completed before discussion 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 $n = 3$.