Intro to Proofs Day 17 Outline (This class meets for 1 hour and 50 minutes.)

**Synthesis/quizzes to hand back, Chapter 5 worksheet, proof portfolio problem 8, snacks/pens**

**Synthesis Activity** [0-15 minutes]

* Section 4.1 #8a 3 divides 4^n -1
  + Base case – 3|3 so 3|4^1 – 1
  + Inductive step: Let k in N. Assume 3 divides 4^k – 1. Show 3 divides 4^(k+1) – 1.
  + 4^(k+1) – 1 = 4^k \* 4 – 1 = (3j+1)\*4 – 1 = 12j+4-1 = 12j+3 = 3(4j+1).
  + Since 4j+1 is an integer we have 3 divides 4^(k+1)-1
* Section 4.1 #18a – on slide
  + P(n) is wrong
  + Assumed what they were trying to show!

**Preview Activity on Sets [15-30 minutes]**

* Start on Slide 3 – everyone correct
* Slides 4 and 5 – nearly everyone wrong
* Definitions on slides
* Slide 7-9 – who do you think is right?
* Slide 10/11
  + List all of the subsets of {1,2}. Which ones are proper?
* Slide 12
  + If everyone who is in band is in drama club and every one who is in drama club is in band then it’s the same people in drama club and band

**Chapter 5 worksheet** [30-50 minutes]

* They work, present if it seems appropriate

---------------------------------BREAK--------------------------------------------

**Chapter 5 worksheet** [60-100minutes]

* They work, present if it seems appropriate

**Play Conjecture Prove: [100-110 minutes]**

For next time:

Synthesis #15: Section 5.1 #1 (a)/(b) on pages 224-225, #5 on page 225, #7 (a)-(e) on page 226

Quiz: New skills S1, S2, and P2 attempt 2