Intro to Proofs Day 6 Outline (This class meets for 1 hour and 50 minutes.)

**Need 3.1 worksheets, quizzes, synthesis to hand back, snacks/pens/cards**

**Present Synthesis Activities** [0-20 minutes]

* Section 2.3 #5 page 62
  + The set of all integers greater than or equal to 5: {x\in\Z : x>= 5}
  + The set of all even integers: {x\in\Z: x = 2k for some k\in \Z}
  + The set of all positive rational numbers: {x\in\Q: x>0}
  + The set of all real numbers greater than 1 and less than 7: {x\in\R: 1<x< 7}
  + The set of all real numbers whose square is greater than 10: {x\in\R: x^2> 10}
* Section 2.4 #8 on page 76
  + For each x in \Z^\* there exists a y\in Z^\* such that xy=1
  + (a) False because 3\in\Z^\* but no nonzero integer times 3 is 1
  + (b) quantifiers:
  + © - negation quantifiers
  + (d) – There exists x in Z^\* such that for all y in Z^\*, xy \neq 1

**Discuss Preview Activity for Monday**

* Go over snapshots
* Go over slide 7

**Section 3.1 worksheet** [20-50 minutes]

* They do pages 1 and 2 and then find a partner to do the proof together.
* They practice typing the proof from Activity 1
* They do pages 3 and 4

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

**Practice TeXing** [60-80 minutes]

* Show tex stuff – how to type congruence, divides, sets, fractions (though they shouldn’t use these in proofs about congruence/division)
* They practice texing by typing proof from Activity 1 or 3

**Discuss Preview Activity for Wednesday**

* Questions –
  + Practice writing some contrapositive statements
  + When to use proof by contrapositive

**Section 3.2** [90-110 minutes]

* Go through logical equivalences as a class
* Write contrapositive of the following statements:
  + If n^2 is even then n is even.
  + If you are happy and you know it then clap your hands.
  + If a function f is differentiable at a then f is continuous at a.
* Example of when you might use the contrapositive: If n^2 is even then n is even.
* If time: They start proof for Section 3.2

For next time: SA7: Section 3.1 #1(a) + type a formal proof, #1(c), #3(a) and (c) – try lots of examples and see if you can find a counterexample (don’t need to do a proof)

Quiz: L1 (last attempt), L2 (last attempt), L3 (2nd attempt), L4 (2nd attempt), L5 (1st attempt)

No preview activity