

**MATH 203: HOMEWORK 7**  
**DUE BY 5PM ON FRIDAY, MARCH 21**

- 1) Read chapters 11 to 15 of Denis Guedj's *The Parrot's Theorem*. Write at least a page (hand-written is OK) but no more than two pages with your reaction to those five chapters and any questions or observations you have about the material contained therein. If you wish, you may look up the work of one of the mathematicians mentioned and write that page on some result/theorem of his/hers that you did not know before.
- 2) Rewrite the following sets using the enumerative (roster) method:
  - (a)  $\{n \in \mathbb{N} \mid n^2 < 36\}$
  - (b)  $\{n^2 \mid n \in \mathbb{N} \text{ and } n < 6\}$
  - (c)  $\{x \in \mathbb{R} \mid \sin x = x\}$
  - (d)  $\{x \in \mathbb{Z} \mid |x| \text{ is prime and even}\}$
- 3) Rewrite the following sets using the formulaic (set-builder) method:
  - (a)  $\{1, 4, 9, 16, 25, \dots, 10,000\}$
  - (b)  $\{1, 4, 9, 16, 25, \dots\}$
  - (c)  $\{-2, 4, -8, 16, \dots\}$
  - (d)  $\{6, 17, 92\}$
- 4) Using the extensionality axiom, prove that set equality satisfies axioms III-1, III-2, and III-3 of the hand-out with all variables in those three axioms changed to variables denoting sets.