Instructions: Solve and turn in all of the assigned problems, showing ALL steps or reasoning used in your solutions.

Due on Tuesday, April 25th at the BEGINNING of class.

p. 54-56: (Section 2.3) Problems 3, 7(a,b), 9(a)

p. 59-62: (Section 2.4) Problem 1(a,b,c)

• Prove that the sequence 0, 1, 0, 1, 0, 1, . . . does not converge to a limit. This means that you are proving the following statement: \( \forall x, (x_n) \) does not converge to \( x \).

• Show that if \( S \) is a nonempty set which is bounded from above, then there exists a sequence \( (s_n) \) of elements of \( S \) where \( (s_n) \to \sup S \). (Hint: choose \( s_n \) so that it’s within distance \( \frac{1}{n} \) from \( \sup S \).)