Homework 3

The exercises below are taken from the book

D'Angelo/West, Mathematical Thinking, Second Edition.

You can download the book in my webpage: lmattos.web.illinois.edu.

Solutions must be submitted on Canvas.

Due date: next Wednesday, February 15st.

1. Page 74, exercise 3.41

2. Page 74, exercise 3.43

3. Page 74, exercise 3.45

   In this exercise, we are assuming that you are familiar with the concept of rational numbers coming from high school.

4. For each $j \in \mathbb{N}$, define
$$H_j := 1 + \ldots + \frac{1}{j}.$$

   Use mathematical induction to show that $H_{2^n} \geq 1 + n/2$ for every $n \in \mathbb{N}$.