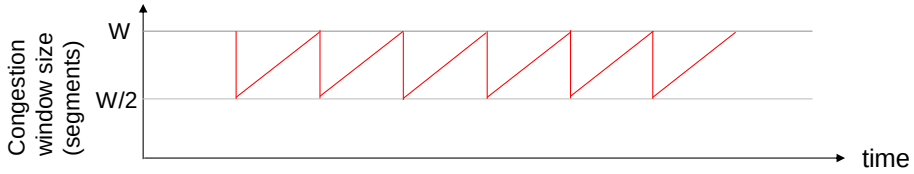
Homework 4

Part I. **Problems** of **Chapter 3** in the textbook.

P27, P40, P43, P41

Part II. Additional problems.

II.1 Consider TCP's **congestion avoidance** phase in which the congestion window size is additive-increase and multiplicative-decrease. Suppose that the length of each segment is identical (which is equal to 1 MSS) and the maximum available bandwidth for a sender before congestion happens is equal to W segments all the time. Assume that the round-trip time (denoted by RTT) for the sender is a constant all the time. In this situation, the congestion window size over time is shown as the red curve in the figure below. Assuming $W \gg 1$, what is the average throughput (in bits per second)? Write down your solution in terms of W, MSS, and RTT, where the unit of MSS is bits.



II.2 P45 of the Chapter 3.

Hint: Use the figure in Problem II.1.