The “Not-To-Be-Turned-In Practice-For-The-Final Exam” Problem Set

Question 1. Chapter 11, Number 6
Some Hints:

- A good greedy algorithm for this problem: When a new job comes in, assign it to the machine which is currently destined to finish soonest (taking into account its load and speed).

- Establish the following lower bounds on the optimum makespan $T^*$:
  
  - $T^* \geq (\sum_j t_j)/(m + 2k)$
  
  - $T^* \geq t_j/2$ for every job $j$

- As in the proof from class/text, now let $i$ be the machine that achieves the makespan and think about the final job $j$ assigned to it....

Question 2. Chapter 11, Number 4
Hint: Closely mimic the pricing method approach from Section 11.4

Question 3. Chapter 11, Number 11 Hint: Round weights down using some integer $b$. Similarly to the approach taken in class, try to deduce what value $b$ would need to have to make a good approximation while simultaneously keeping the weight-based dynamic programming table from getting too large.