

Assignment 15, due Feb 26

1. Please read the formal proof for the analysis of the generalized form of EXPO, i.e., proof for Theorem 14.2 on page 267-268. Interestingly, EXPO can be extended to cases where neither m and M nor φ are known (see rest of §14.1.2). This might be difficult reading for the undergraduate students, but not for the graduate students.
2. Next class we'll cover the threat-based policy, the online algorithm with optimal performance, for one-way trading or randomized search. Please read §14.1.3 till end of Lemma 14.1 on page 271.
3. Exercise 14.1 on page 266.
4. For CSE 40317 only: Consider the following randomized algorithm RANDOM for one-way trading on prices in $[1, M)$: Choose a reservation price p^* uniformly at random from $[1, M)$. Accept the first price that is at least p^* . Show that the competitive ratio of RANDOM is $\Omega(M)$. [Hint: Determine a price $q \in [1, M)$ such that if the maximum price in a sequence is q , then the expected return of RANDOM is $O(q/M)$. To calculate the expected return you don't necessarily have to integrate, an upper bound is sufficient.]
5. For CSE 60317 only: Exercise 14.4 on page 269.