Exercises (Analyzing Algorithms)

1. Use Master's theorem to solve the following division functions.
   a. $T(n) = 3T(n/2) + n^2$

   b. $T(n) = 4T(n/2) + n^2$

   c. $T(n) = 16T(n/4) + n$

   d. $T(n) = 2T(n/2) + n\log n$

   e. $T(n) = 2T(n/4) + n^{0.51}$

   f. $T(n) = \sqrt{2}T(n/2) + \log n$

   g. $T(n) = 6T(n/3) + n^2 \log n$

2. Use Master's theorem to solve the following decreasing functions.
   a. $T(n) = 0.5T(n-1) + n$

   b. $T(n) = 2/3T(n-1) + n^2$

   c. $T(n) = T(n-1) + n^2$

   d. $T(n) = 2T(n-1) + n^2$

   e. $T(n) = 3T(n-2) + n$