1. For the sequences listed below.
   a) Find the best Big O for each sequence.
   b) List the sequences from slowest growth rate to fastest growth rate.
   
   \[5\sqrt{n^3 + n}, \quad n\log(n^8), \quad 7\log(\log(n)), \quad 0.1n, \quad 2^n, \quad \log(n) + 832, \quad 6n + n^2, \quad \frac{\sqrt{n^7}}{3n^{10}}, \quad \log(783)\]

   For each of the following code sections, find the best Big O for the growth rate (for time) in terms of n.

2. for (i = 1; i < n; i*=3)
   x += 3;
   for (j = 0; j < n; ++j)
     x *= 4;

3. for (i = 1; i < n; i*=2)
   for (j = 1; j < n; j*=2)
     x += 1;

4. x=0
   for (i = 0; i < n; ++i)
     for (j = 0; j < n; ++j)
       ++x;
   for (i = 0; i < x; ++i)
     for (j = n; j > 1; j /=3)
       ++y

5. // A and B are n by n matrices
   Multiply A times B
   Search the resulting matrix for the number 1.