Homework Assignment: 2 Name: Jonathan Gaines

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1. XSort Algorithm

- (a)  $EXAMPLE \Rightarrow AXEMPLE \Rightarrow AEXMPLE \Rightarrow AEEMPLX \\ \Rightarrow AEELPMX \Rightarrow AEELMPX$
- (b) Time Efficiency:  $O(n^2)$ Space Efficiency:
- (c)
- 2. Bubble Sort
  - (a)  $EXAMPLE \Rightarrow EAMPLEX \Rightarrow AELEMPX \Rightarrow AEELMPX \\ \Rightarrow AEELMPX \Rightarrow AEELMPX$
  - (b)
  - (c)
- 3. Show that  $n^2 \in O(n^2 + 10n), n > 0$
- 4. Show that  $n \notin \Omega(n^2)$

Choose k = 1

Assuming n > 1, then

$$\frac{f(n)}{g(n)} = \frac{n}{n^2} < \frac{n^2}{n^2} = 1$$

Choose c = 1. Note that  $n < n^2$ 

Thus  $n \notin \Omega(n^2)$  because  $n < n^2$  when n > 1