CSCI 241H:
HOMEWORK 5

Show your work.

1. If I tell you that the running time of my program is at least $O(f(x))$, why is this statement meaningful?

2. Let $f(x)$ be $O(g(x))$ and $g(x)$ be $O(h(x))$. Show that $k(x) = 3f(x) + 5g(x) + 8h(x)$ is $O(h(x))$.

3. Consider the series $f(k) = \Sigma_{i=1}^{k} 2k - 1$. Show that $f(k) = k^2$. Don't look at any resources please.

4. Let $0 < x < 1$. Show that the infinite summation $x + x^3 + x^5 + x^7 + \ldots$ evaluates to $x/(1 - x^2)$.