Math 191
Worksheet on Optimization

4. Consider the graph of the function $f(x) = \frac{x^3}{1 + x^4}$. Let $s(x)$ denote the slope of the secant line between $(0,0)$ and $(x, f(x))$.

a) Find a formula for the function $s(x)$.

b) At what point $x$ is the slope of the secant line between $(0,0)$ and $(x, f(x))$ maximized? (Hint: if you’ll need to consider the critical points of the function $s(x)$, as well as $\lim_{x \to \pm\infty} s(x)$).