1 Heron's Method as Newton's Method

Consider the function $f\colon \mathbb{R} \to \mathbb{R}$, $f(x) := x^2 - a$ for some nonnegative number $a \geq 0$. Apply Newton's method to the nonlinear system $f(x) = 0$ (root finding problem). Compare the resulting iterative scheme to Heron's algorithm from earlier sheets.

Solution: