Newton Raphson Derivation for Square Root using Babylonian formula:

This function, known as the Newton-Raphson method, approximates the roots of a function

We want to know where a is our number and x is the result that we are looking for.

We can turn this into:

This is the same thing as trying to find the roots of the function

Plugging these into the Newton-Raphson formula nets the equation:

We can pull the numerators apart