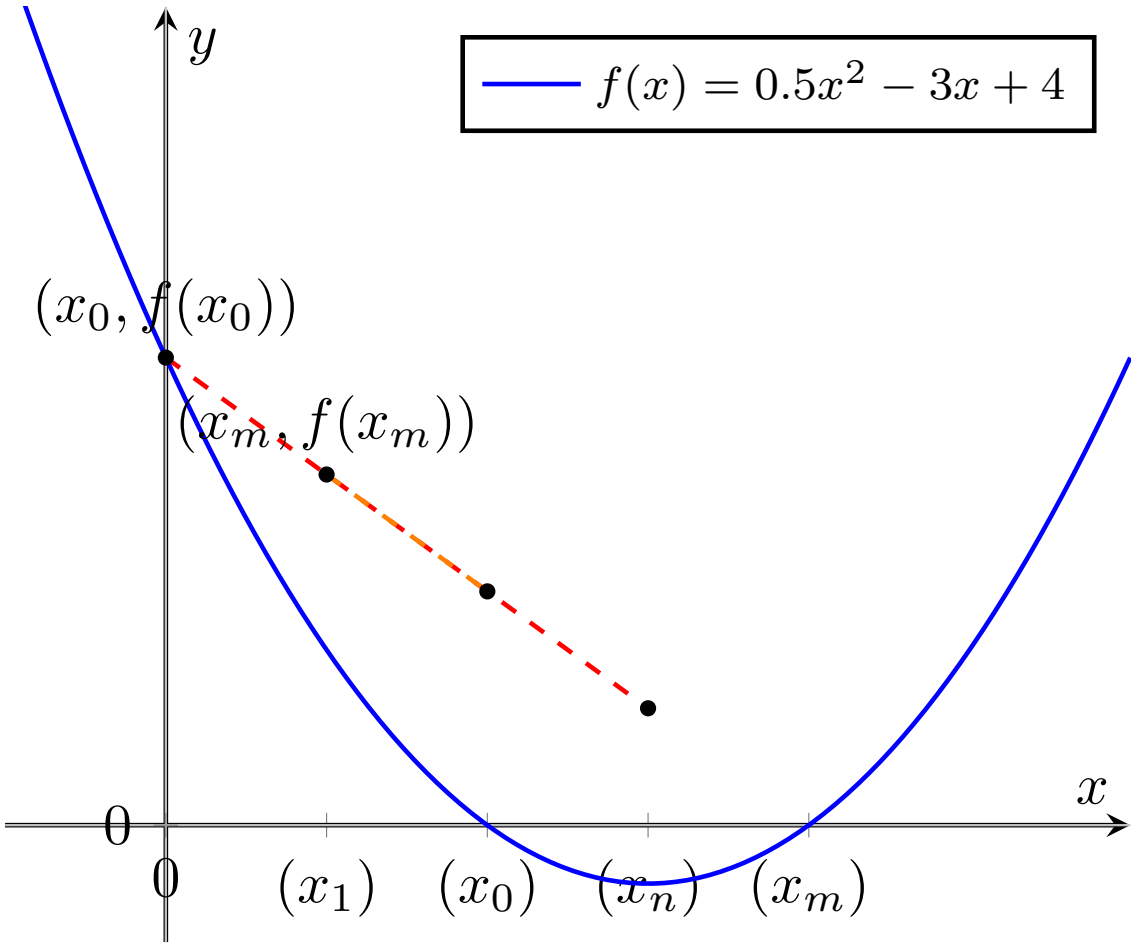

Illustration of Newton's method in 1 variable case, aiming to find the root of the nonlinear equation $f(x) = 0.5x^2 - 3x + 4$. First we initialize the guessed solution x_0. The tangent line to $f(x)$ at x_0 intersects the x-axis at the point x_1, which is the updated solution. The procedure is then iterated multiple times until the real root is found, or at least a desired approximation is reached. We note that since the equation might have more than 1 solution, the initialization is critical as the method would drive toward the closest root. On the same figure, we can see that if initially we begin at x_m (on the left), then we end up with different root.