0.0.1 Initials

Function:

$$(3+w)^2+(9+x)^2+(-2+y)^2 \tag{1}$$

Gradient Vector:

$$\begin{bmatrix} 2\,(9+x) \\ 2\,(-2+y) \\ 2\,(3+w) \end{bmatrix} \tag{2}$$

Hession Matrix:

$$\begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix} \tag{3}$$

Start Value: (w =¿ 0.0, y =¿ 0.0, x =¿ 1.0) Function at point: 113.0

0.0.2 Iteration 1

Gradient at (w =¿ 0.0, y =¿ 0.0, x =¿ 1.0)

$$\begin{bmatrix} 20 \\ -4 \\ 6 \end{bmatrix} \tag{4}$$

Hessian at (w =¿ 0.0, y =¿ 0.0, x =¿ 1.0)

$$\begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix} \tag{5}$$

Inverse of Hessian

$$\begin{bmatrix} 0.5 & 0 & 0 \\ 0 & 0.5 & 0 \\ 0 & 0 & 0.5 \end{bmatrix} \tag{6}$$

(w =¿ -3.0, y =¿ 2.0, x =¿ -9.0) Function at point:

$$0 \tag{7}$$

Diff of function values between two iterations:

$$113 \tag{8}$$

0.0.3 Iteration 2

Gradient at (w =¿ -3.0, y =¿ 2.0, x =¿ -9.0)

$$\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \tag{9}$$

Hessian at (w =¿ -3.0, y =¿ 2.0, x =¿ -9.0)

$$\begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix} \tag{10}$$

Inverse of Hessian

$$\begin{bmatrix} 0.5 & 0 & 0 \\ 0 & 0.5 & 0 \\ 0 & 0 & 0.5 \end{bmatrix} \tag{11}$$

(w =¿ -3.0, y =¿ 2.0, x =¿ -9.0) Function at point:

$$0 \tag{12}$$

Diff of function values between two iterations:

$$0 \tag{13}$$