0.0.1 Initials

Function:

$$(-3.1416 + x)^2 + (-2.7183 + y)^2 \tag{1}$$

Gradient Vector:

$$\begin{bmatrix} 2\,(-3.1416 + x) \\ 2\,(-2.7183 + y) \end{bmatrix} \tag{2}$$

Hession Matrix:

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

Start Value: (y =¿ 5.0, x =¿ -1.0) Function at point: 22.359035754102166

0.0.2 Iteration 1

Gradient at (y =¿ 5.0, x =¿ -1.0)

$$\begin{bmatrix} -8.2832 \\ 4.5634 \end{bmatrix} \tag{4}$$

Hessian at (y =¿ 5.0, x =¿ -1.0)

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

Inverse of Hessian

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

(y =¿ 2.71828, x =¿ 3.14159264) Function at point:

$$0 \tag{7}$$

Diff of function values between two iterations:

$$22.359 \tag{8}$$

0.0.3 Iteration 2

Gradient at (y =¿ 2.71828, x =¿ 3.14159264)

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

Hessian at (y =¿ 2.71828, x =¿ 3.14159264)

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

Inverse of Hessian

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

(y =¿ 2.71828, x =¿ 3.14159264) Function at point:

$$0 \tag{12}$$

Diff of function values between two iterations:

$$0 \tag{13}$$