Congratulations! You passed!

Grade received 100%

Latest Submission Grade 100%

To pass 80% or higher

Go to next item

1. In this assessment, you will be tested on all of the different topics you have in covered this module. Good luck!

1/1 point

Calculate the Jacobian of the function $f(x, y, z) = x^2 cos(y) + e^z sin(y)$ and evaluate at the point $(x, y, z) = (\pi, \pi, 1)$.

$$J(x, y, z) = (-2\pi, -e, 0)$$

$$\int J(x, y, z) = (-2\pi, -e, 1)$$

$$\int J(x, y, z) = (-2\pi, e, 0)$$

$$\int J(x, y, z) = (-2\pi, e, 1)$$

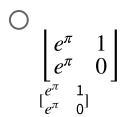
⊘ Correct

Well done!

2. Calculate the Jacobian of the vector valued functions:

1/1 point

$$u(x, y) = x^2y - cos(x)sin(y)$$
 and $v(x, y) = e^{x+y}$ and evaluate at the point $(0, \pi)$.



$$\begin{bmatrix}
0 & e^{\pi} \\
1 & e^{\pi}
\end{bmatrix}$$

$$\begin{bmatrix}
0 & e^{\pi} \\
1 & e^{\pi}
\end{bmatrix}$$

$$\begin{bmatrix} 0 & 1 \\ e^{\pi} & e^{\pi} \end{bmatrix}$$

$$\begin{bmatrix} 0 & 1 \\ e^{\pi} & e^{\pi} \end{bmatrix}$$

$$\begin{bmatrix}
e^{\pi} & e^{\pi}
\end{bmatrix}$$

$$\begin{bmatrix}
e^{\pi} & 1 \\
0 & e^{\pi}
\end{bmatrix}$$

$$\begin{bmatrix}
e^{\pi} & 1 \\
0 & e^{\pi}
\end{bmatrix}$$

Well done!

3. Calculate the Hessian for the function $f(x, y) = x^3 cos(y) - xsin(y)$.

1/1 point

$$\begin{bmatrix} 6\cos(x) & -3x^2\sin(y) - \cos(y) \\ -3x^2\sin(y) - \cos(y) & x\sin(y) - y^3\cos(x) \end{bmatrix}$$

$$H = \begin{bmatrix} 6\cos(x) & -3x^2\sin(y) - \cos(y) \\ -3x^2\sin(y) - \cos(y) & x\sin(y) - y^3\cos(x) \end{bmatrix}$$

$$\begin{bmatrix}
6x\cos(y) & -3x^2\sin(y) - \cos(y) \\
-3x^2\sin(y) - \cos(y) & x\sin(y) - x^3\cos(y)
\end{bmatrix}$$

$$H = \begin{bmatrix}
6x\cos(y) & -3x^2\sin(y) - \cos(y) \\
-3x^2\sin(y) - \cos(y) & x\sin(y) - x^3\cos(y)
\end{bmatrix}$$

$$\begin{array}{c|cccc}
 & 6x^2cos(y) & -3x^2sin(y) - cos(x) \\
 & -3x^2sin(y) - cos(y) & xsin(y) - xcos(y) \\
 & H = \begin{bmatrix} 6x^2cos(y) & -3x^2sin(y) - cos(x) \\ -3x^2sin(y) - cos(y) & xsin(y) - xcos(y) \end{bmatrix}
\end{array}$$

$$\begin{bmatrix}
6\cos(y) & -3x^2\sin(y) - \cos(y^2) \\
-3x^2\sin(y) - \cos(y) & x^2\sin(y) - x^3\cos(y)
\end{bmatrix}$$

$$H = \begin{bmatrix}
6\cos(y) & -3x^2\sin(y) - \cos(y^2) \\
-3x^2\sin(y) - \cos(y) & x^2\sin(y) - x^3\cos(y)
\end{bmatrix}$$

Well done!

4. Calculate the Hessian for the function $f(x, y, z) = xy + sin(y)sin(z) + z^3e^x$.

1/1 point

$$\begin{bmatrix}
e^x z^3 & 1 & 3e^x z^2 \\
1 & -sin(y)sin(z) & cos(y)cos(z) \\
3e^x z^2 & cos(y)cos(z) & 6e^x z - sin(y)sin(z)
\end{bmatrix}$$

$$H = \begin{bmatrix}
e^x z^3 & 1 & 3e^x z^2 \\
1 & -sin(y)sin(z) & cos(y)cos(z) \\
3e^x z^2 & cos(y)cos(z) & 6e^x z - sin(y)sin(z)
\end{bmatrix}$$

$$\begin{bmatrix}
3e^{x}z^{2} & -1 & 3e^{x}z \\
1 & -sin(x^{2})sin(z) & cos(y)cos(z) \\
3e^{x}z & cos(y)cos(z) & 6e^{y}z^{2} - sin(y)sin(z)
\end{bmatrix}$$

$$H = \begin{bmatrix}
3e^{x}z^{2} & -1 & 3e^{x}z \\
1 & -sin(x^{2})sin(z) & cos(y)cos(z) \\
3e^{x}z & cos(y)cos(z) & 6e^{y}z^{2} - sin(y)sin(z)
\end{bmatrix}$$

$$\begin{bmatrix}
-e^{x}z^{3} & 0 & 3e^{y}z^{2} \\
1 & sin(y)sin(z) & cos(y)cos(z) \\
3e^{x}z & cos(y)cos(z) & 6e^{-xz} - sin(y)sin(z)
\end{bmatrix}$$

$$H = \begin{bmatrix}
-e^{x}z^{3} & 0 & 3e^{y}z^{2} \\
1 & sin(y)sin(z) & cos(y)cos(z) \\
3e^{x}z & cos(y)cos(z) & 6e^{-xz} - sin(y)sin(z)
\end{bmatrix}$$

$$\begin{bmatrix}
2e^{x}z^{3} & 1 & e^{x}z^{2} \\
0 & -sin(x)sin(z) & cos(y)cos(z) \\
3e^{x}z^{2} & cos(y)cos(z) & 6e^{2x} - sin(y)sin(x)
\end{bmatrix}$$

$$H = \begin{bmatrix}
2e^{x}z^{3} & 1 & e^{x}z^{2} \\
0 & -sin(x)sin(z) & cos(y)cos(z) \\
3e^{x}z^{2} & cos(y)cos(z) & 6e^{2x} - sin(y)sin(x)
\end{bmatrix}$$

Well done!

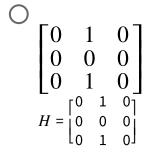
5. Calculate the Hessian for the function $f(x, y, z) = xycos(z) - sin(x)e^yz^3$ and evaluate at the point (x, y, z) = (0, 0, 0)

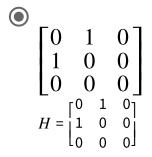
$$\begin{bmatrix}
0 & 0 & 0 \\
1 & 0 & 0 \\
0 & 1 & 0
\end{bmatrix}$$

$$H = \begin{bmatrix}
0 & 0 & 0 \\
1 & 0 & 0 \\
0 & 1 & 0
\end{bmatrix}$$

$$\begin{bmatrix}
0 & 0 & 0 \\
1 & 0 & 1 \\
0 & 0 & 0
\end{bmatrix}$$

$$H = \begin{bmatrix}
0 & 0 & 0 \\
1 & 0 & 1 \\
0 & 0 & 0
\end{bmatrix}$$





Well done!