Calculating the Jacobian

Practice Quiz, 5 questions

5/5 points (100%)

Congratulations! You passed!

Next Item

1 / 1
point

1.
In this quiz you will put into practice how to calculate the Jacobian from the lecture video.

For $f(x, y) = x^2y + \frac{3}{4}xy + 10$, calculate the Jacobian row vector J.

- $J = [2xy + \frac{3}{4}y + 10, x^2 + \frac{3}{4}x + 10]$
- $J = [2xy + \frac{3}{4}y, x^2 + \frac{3}{4}x]$

Correct
Well done!

- $J = [xy + \frac{3}{4}y, x^2 + \frac{3}{4}xy]$
- $J = [xy + \frac{3}{4}y + 10, x^2 + \frac{3}{4}xy + 10]$

1 / 1
point

2.
For $f(x, y) = e^x cos(y) + xe^{3y} - 2$, calculate the Jacobian row vector J.

- $J = [e^x cos(y) + e^{3y} - 2, -e^x sin(y) + 3xe^{3y} - 2]$
- $J = [e^x cos(y) + e^{3y}, -e^x sin(y) + 3xe^{3y}]$

Correct
Well done!

- $J = [e^x cos(y) + e^{3y}, e^x sin(y) + xe^{3y}]$
- $J = [e^x cos(y) + e^{3y} - 2, e^x sin(y) + xe^{3y} - 2]$

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1 / 1
point

3.
For $f(x, y, z) = e^x cos(y) + x^2y^2z^2$, calculate the Jacobian row vector J.

- $J = [e^x cos(y) + 2xy^2z^2, e^x sin(y) + 2x^2yz^2, 2x^2y^2z^2]$
- $J = [e^x cos(y) + 2xy^2z^2, -e^x sin(y) + 2x^2yz^2, 2x^2y^2z]$

Correct
Well done!

- $J = [e^x sin(y) + 2xy^2z^2, -e^y sin(x) + 2x^2yz^2, 2x^2y^2z^2]$
- $J = [e^x cos(y) + xy^2z^2, -e^x sin(y) + x^2yz^2, x^2y^2z]$

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1 / 1
point

4.
For $f(x, y, z) = x^2 + 3e^ye^z + cos(x)sin(z)$, calculate the the Jacobian row vector and evaluate at the point $(0, 0, 0)$.

- $J(0, 0, 0) = [0, 2, 3]$
- $J(0, 0, 0) = [2, 3, 0]$
- $J(0, 0, 0) = [3, 0, 2]$
- $J(0, 0, 0) = [0, 3, 4]$

Correct
Well done!

5.

For $f(x, y, z) = xe^y cos(z) + 5x^2 sin(y)e^z$, calculate the the Jacobian row vector and evaluate at the point $(0, 0, 0)$.

- [x] $J(0, 0, 0) = [1, 0, 0]$

Correct

Well done!

- [ ] $J(0, 0, 0) = [-1, 0, 1]$
- [ ] $J(0, 0, 0) = [0, 0, 1]$
- [ ] $J(0, 0, 0) = [1, 0, -1]$