**Roll No: 2003027(Section A)**

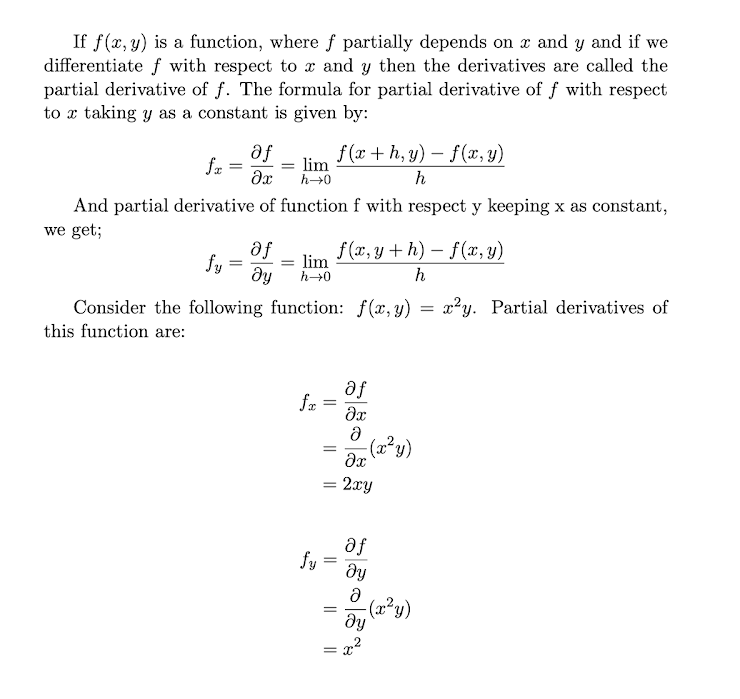
**Lab Evaluation 2**

**Lab Task Q1.**

**Question:** Create a Latex program which will format following text

If f(x, y) is a function, where f partially depends on x and y and if we diﬀerentiate f with respect to x and y then the derivatives are called the partial derivative of f. The formula for partial derivative of f with respect to x taking y as a constant is given by:

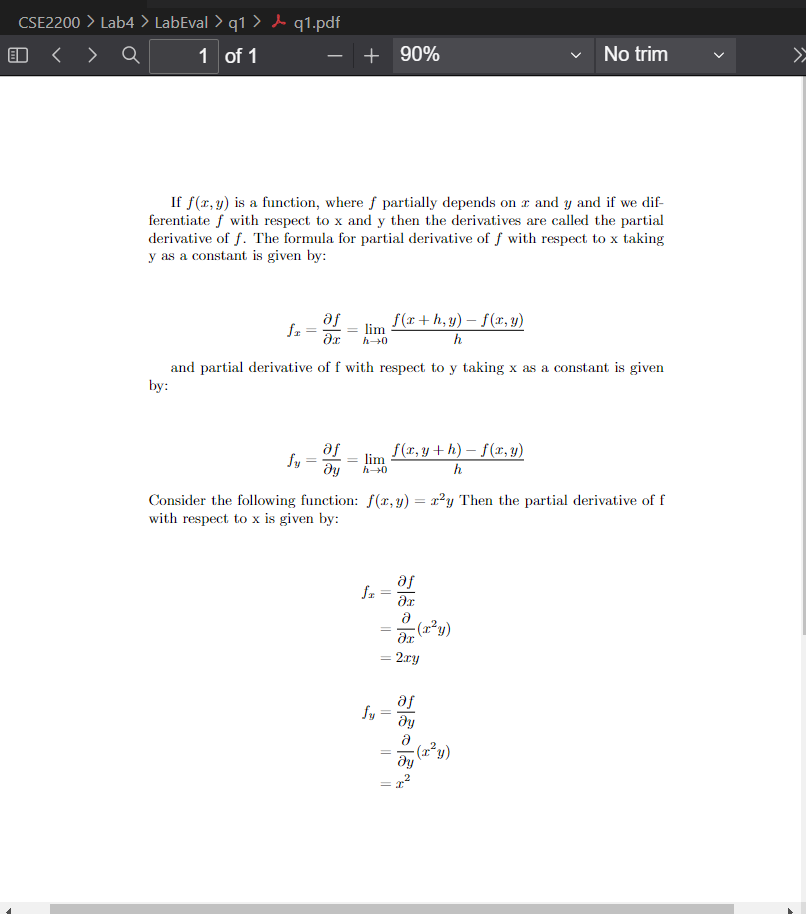
Consider the following function: f(x,y) = x2y. Partial derivatives of this function



**Solution (Latex Code):**

|  |
| --- |
| %Tonmoy-2003027  \documentclass[a4paper]{article}  \usepackage{amsmath}  \usepackage{amssymb}  \begin{document}  If $f(x, y)$ is a function, where $f$ partially depends on $x$ and $y$ and if we diﬀerentiate $f$ with respect to x and y then the derivatives are called the partial derivative of $f$. The formula for partial derivative of $f$ with respect to x taking y as a constant is given by:\\\\  \begin{align\*}  f\_x = \frac{\partial f}{\partial x} = \lim\_{{h \to 0}} \frac{f(x+h, y) - f(x, y)}{h}  \end{align\*}  and partial derivative of f with respect to y taking x as a constant is given by:\newline\\  \begin{align\*}  f\_y = \frac{\partial f}{\partial y} = \lim\_{{h \to 0}} \frac{f(x, y+h) - f(x, y)}{h}  \end{align\*}  Consider the following function: $f(x,y)=x^2y$ Then the partial derivative of f with respect to x is given by:\newline\\  \begin{align\*}  f\_x & = \frac{\partial f}{\partial x} \\  & = \frac{\partial}{\partial x} (x^2y) \\  & = 2xy \\  \\  f\_y & = \frac{\partial f}{\partial y} \\  & = \frac{\partial}{\partial y} (x^2y) \\  & = x^2 \\  \end{align\*}  \end{document} |

**Output (Screen/Snapshot of Generated PDF):**



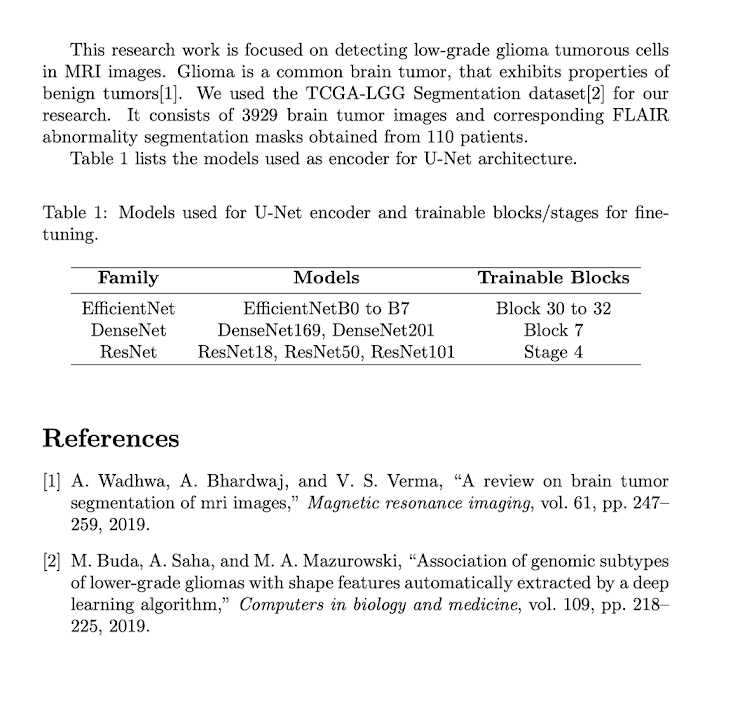
**Lab Task Q2.**

**Question:**

This research work is focused on detecting low-grade glioma tumorous cells in MRI images. Glioma is a common brain tumor, that exhibits properties of benign tumors. We used the TCGA-LGG Segmentation dataset for our research. It consists of 3929 brain tumor images and corresponding FLAIR abnormality segmentation masks obtained from 110 patients.  
  
Table ... lists the models used as encoder for U-Net architecture.

Models used for U-Net encoder and trainable blocks/stages for finetuning. Family Models Trainable Blocks EfficientNet EfficientNetB0 to B7 Block 30 to 32 DenseNet DenseNet169, DenseNet201 Block 7 ResNet  ResNet18, ResNet50, ResNet101  Stage 4

**based on following picture:**



**Solution (Latex Code):**

|  |
| --- |
| %Tonmoy-2003027  \documentclass{article}  \usepackage{tabularx}  \begin{document}  This research work is focused on detecting low-grade glioma tumorous cells in MRI images. Glioma is a common brain tumor, that exhibits properties of benign tumors \cite{1}. We used the TCGA-LGG Segmentation dataset \cite{2} for our research. It consists of 3929 brain tumor images and corresponding FLAIR abnormality segmentation masks obtained from 110 patients.\newline Table 1 lists the models used as encoder for U-Net architecture.  \begin{table}[h]  \centering  \begin{tabularx}{\textwidth}{|X|X|X|}  \hline  \textbf{Family} & \textbf{Models} & \textbf{Trainable Blocks} \\  \hline  EfficientNet & EfficientNetB0 to B7 & Block 30 to 32 \\  \hline  DenseNet & DenseNet169, DenseNet201 & Block 7 \\  \hline  ResNet & ResNet18, ResNe50t50 & Stage 4 \\  \hline  \end{tabularx}  \caption{Models used for U-Net encoder and trainable blocks/stages for fine-tuning.}  \label{tab:my\_label}  \end{table}  \begin{thebibliography}{9}  \bibitem{1}  A. Wadhwa, A. Bhardwaj,, V.S Verma "A review on brain tumor segmentation of mri images," Magnetic resonance imaging vol.61 pp. 247-259,2019.  \bibitem{2}  M. Buda, A. Saha, and M. A. Mazurowski, "Association of genomic subtypes of lower-grade gliomas with shape features automatically extracted by a deep learning algorithm," Computers in biology and medicine, vol. 109, pp. 218- 225, 2019  \end{thebibliography}  \end{document} |

**Output (Screen/Snapshot of Generated PDF):**

