12 PARTIAL DIFFERENTIATION

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1 Basic Notations/Definitions/Theorems

1.1 Three-dimensional

We let $\vec{i} = (1, 0, 0), \vec{j} = (0, 1, 0)$ and $\vec{k} = (0, 0, 1)$.

For any vector $\vec{u} = (u_1, u_2, u_3)$, we can write $\vec{u} = u_1\vec{i} + u_2\vec{j} + u_3\vec{k}$.

Let $\vec{u} = (u_1, u_2, u_3)$ and $\vec{v} = (v_1, v_2, v_3)$