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## The Vorticity in Two Dimensions

Consider a two-dimensional velocity field given by

$$oldsymbol{u} = u_1(x,y)oldsymbol{i} + u_2(x,y)oldsymbol{j}.$$

Show that the vorticity  $oldsymbol{\omega} = oldsymbol{
abla} imes oldsymbol{u}$  takes the form

$$\boldsymbol{\omega} = \omega_3(x,y)\boldsymbol{k}.$$

Determine  $\omega_3$  in terms of  $u_1$  and  $u_2$ .

## ✓ Completed

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