This is a great title

This is an even greater subtitle

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Problem 1: Your title

Show that the curl of a vector field in orthogonal curvilinear coordinates is given by

$$\nabla \times \mathbf{v} = \frac{1}{h_1 h_2 h_3} \left[h_1 \left\{ \frac{\partial}{\partial u_2}(h_3 v_3) - \frac{\partial}{\partial u_3}(h_2 v_2) \right\} \hat{\mathbf{e}}_1 + h_2 \left\{ \frac{\partial}{\partial u_3}(h_1 v_1) - \frac{\partial}{\partial u_1}(h_3 v_3) \right\} \hat{\mathbf{e}}_2 + h_3 \left\{ \frac{\partial}{\partial u_1}(h_2 v_2) - \frac{\partial}{\partial u_2}(h_1 v_1) \right\} \hat{\mathbf{e}}_3 \right].$$

References