

$$\text{grad}U = \vec{i}_1 \frac{1}{H_1} \frac{\partial U}{\partial q_1} + \vec{i}_2 \frac{1}{H_2} \frac{\partial U}{\partial q_2} + \vec{i}_3 \frac{1}{H_3} \frac{\partial U}{\partial q_3}$$

$$\text{div}\vec{A} = \frac{1}{H_1 H_2 H_3} \left(\frac{\partial}{\partial q_1} (A_1 H_2 H_3) + \frac{\partial}{\partial q_2} (A_2 H_1 H_3) + \frac{\partial}{\partial q_3} (A_3 H_1 H_2) \right)$$

$$\text{rot}\vec{A} = \frac{1}{H_1 H_2 H_3} \begin{vmatrix} H_1 \vec{i}_1 & H_2 \vec{i}_2 & H_3 \vec{i}_3 \\ \frac{\partial}{\partial q_1} & \frac{\partial}{\partial q_2} & \frac{\partial}{\partial q_3} \\ H_1 A_1 & H_2 A_2 & H_3 A_3 \end{vmatrix}$$

$$\Delta U = \text{div grad}U$$

**(С) Метрикин
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