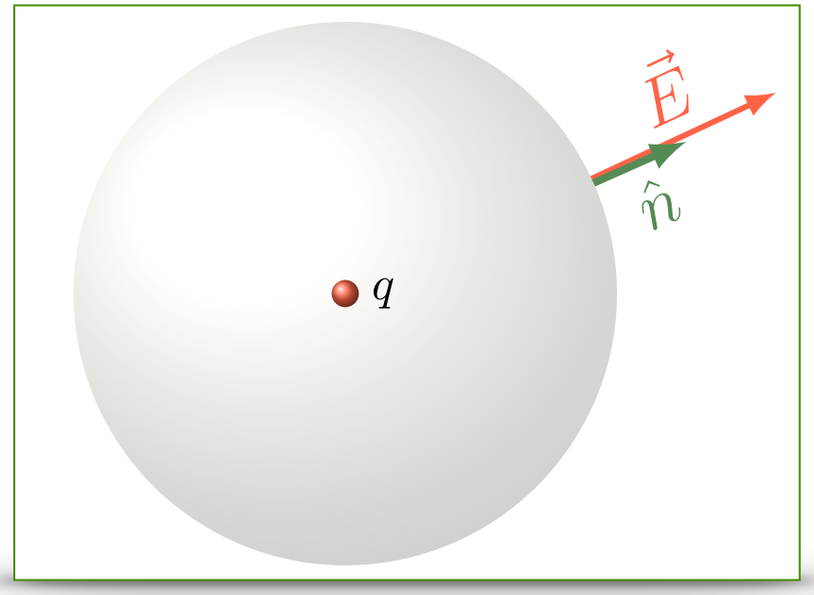
Eletromagnetismo

27 de abril
Eletrostática

Eletrostática

Lei de Gauss

$$\int \vec{E} \cdot \hat{n} \, \mathrm{d}A = \frac{q}{\epsilon_0}$$



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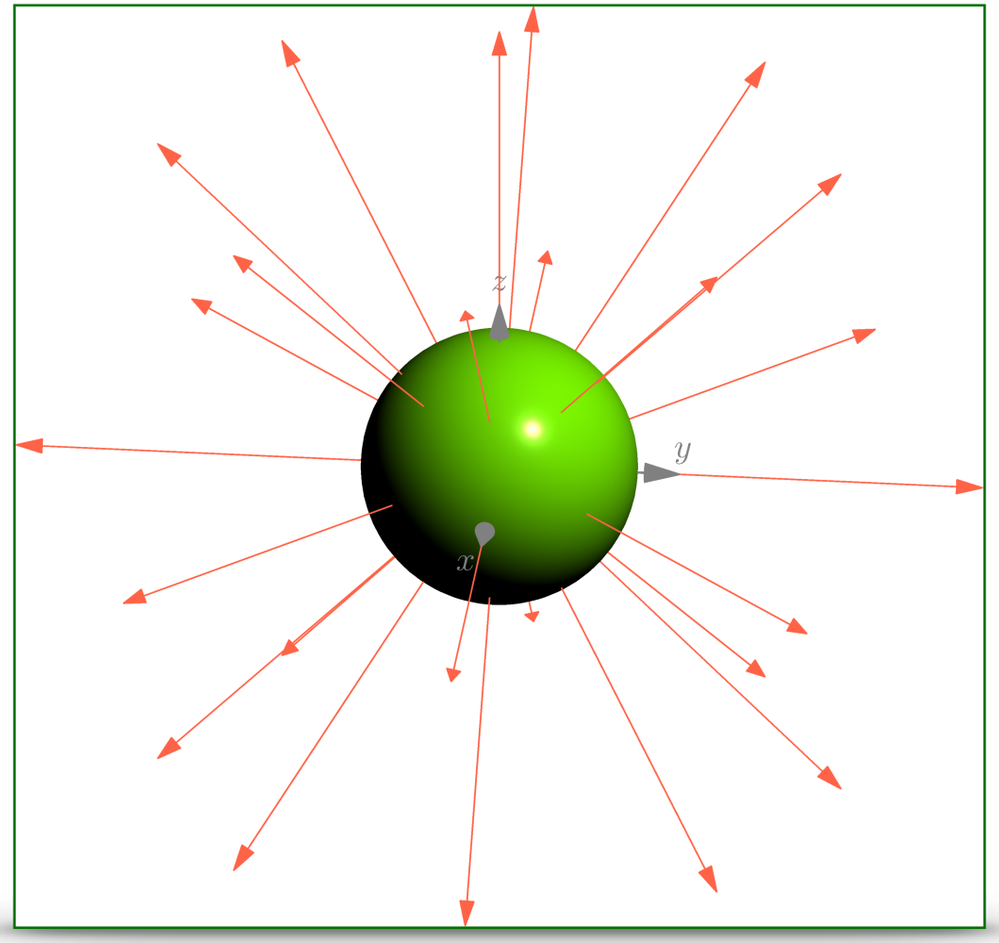

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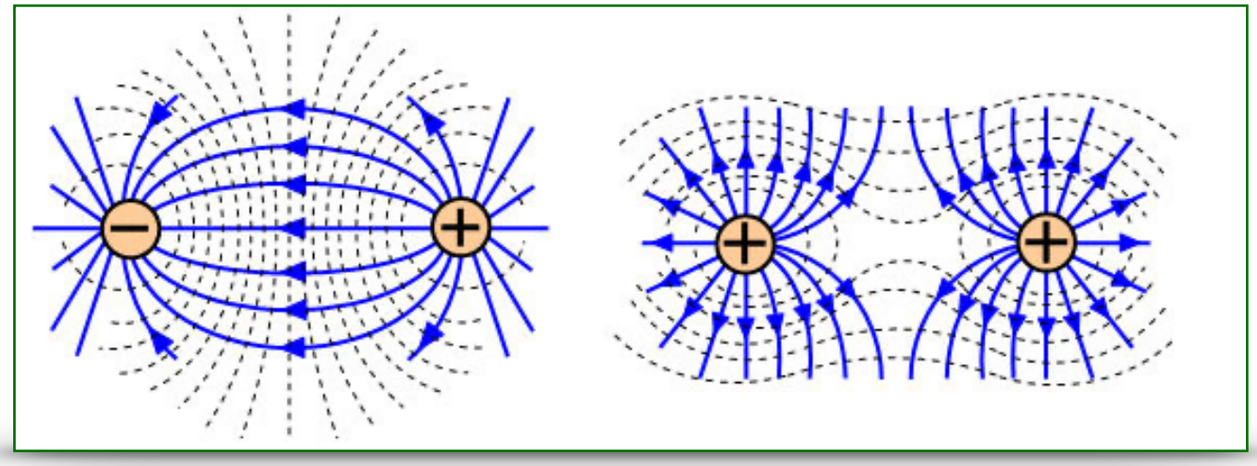
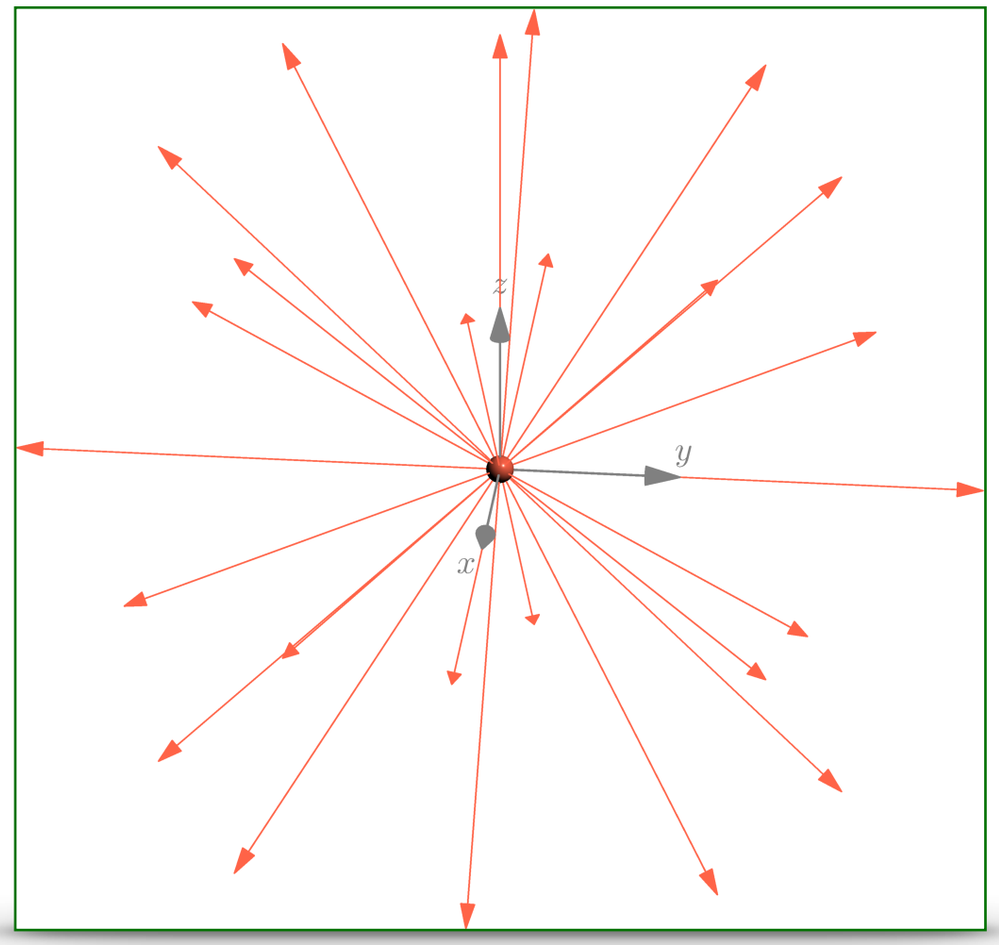


Eletrostática

Lei de Gauss

$$\int \vec{E} \cdot \hat{n} \, \mathrm{d}A = \frac{q}{\epsilon_0}$$

$$\vec{\nabla} \cdot \vec{E} = \frac{\rho}{\epsilon_0}$$

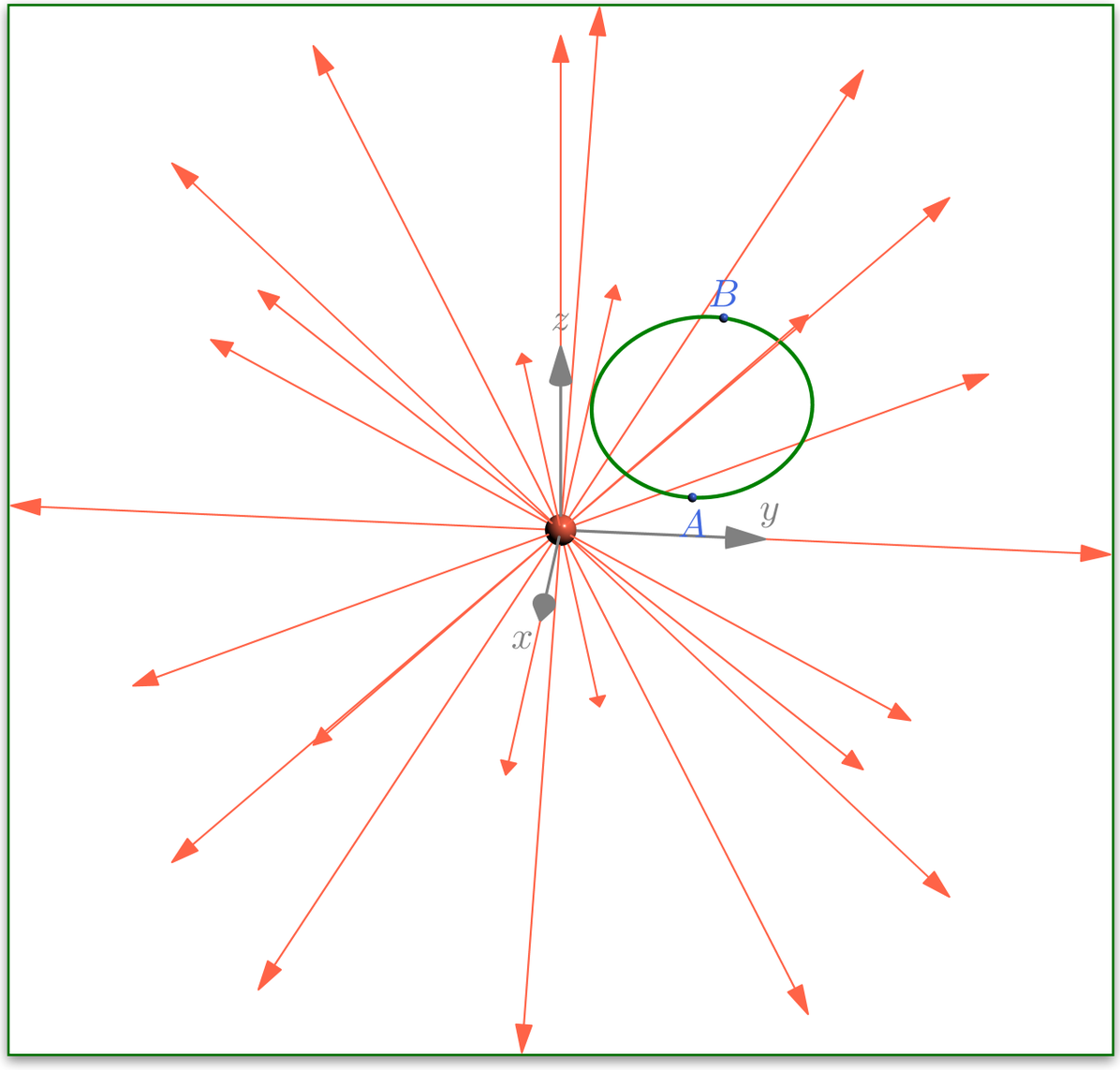


Eletrostática

Rotacional do campo elétrico

$$\oint \vec{\mathbf{E}} \cdot \mathrm{d}\vec{\ell} = 0$$

$$\vec{\boldsymbol{\nabla}} \times \vec{\mathbf{E}} = 0$$



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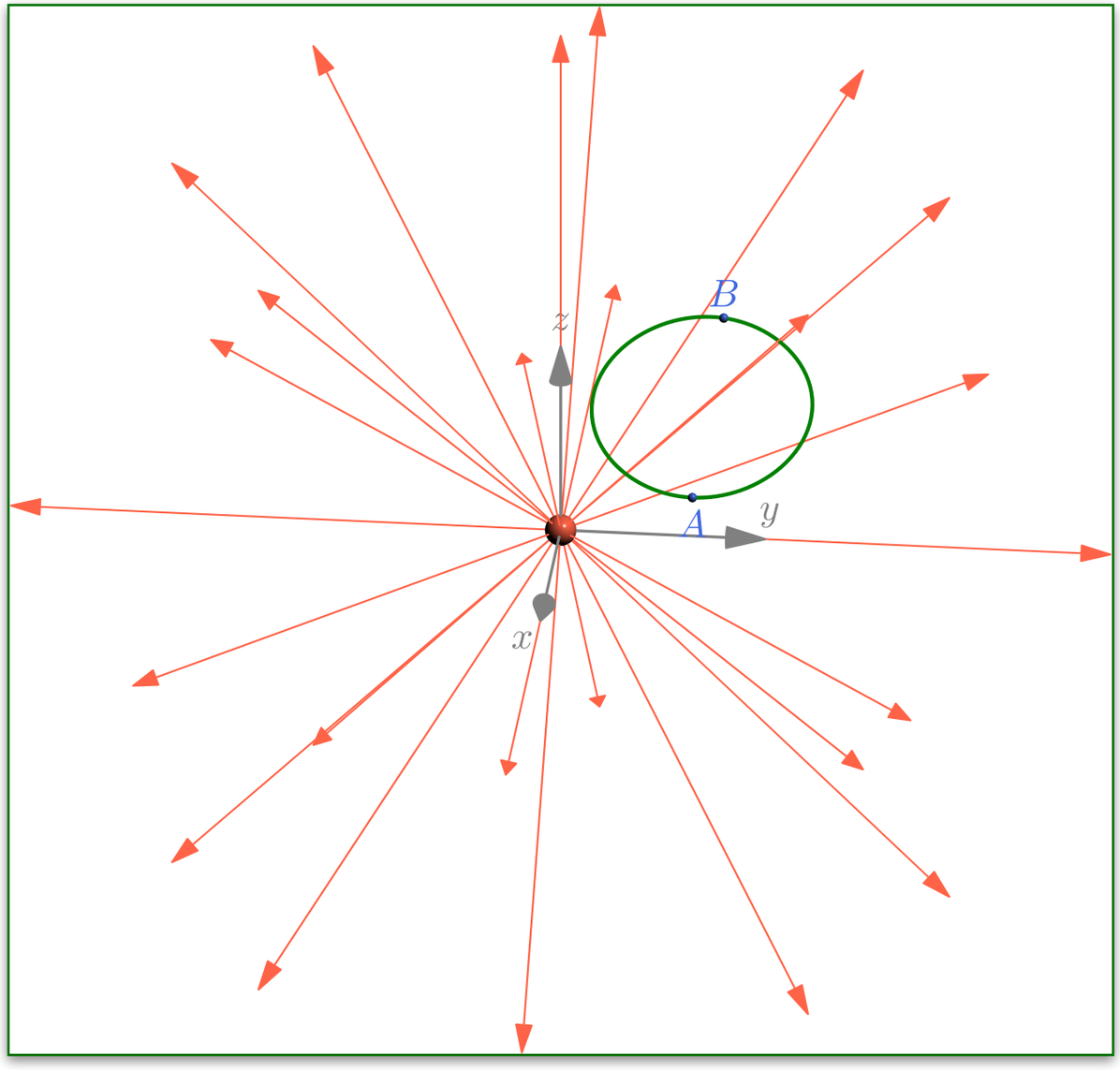

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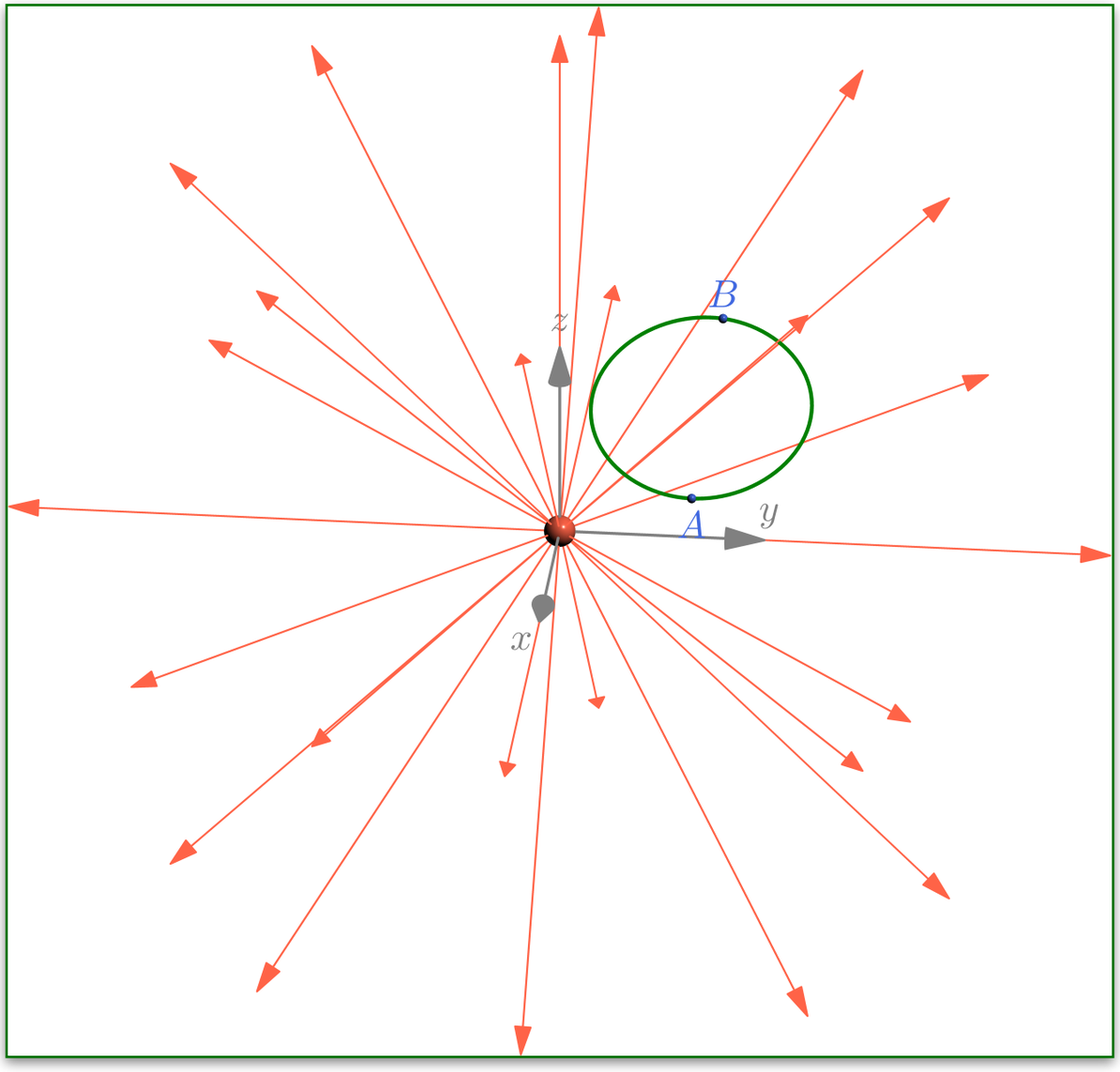
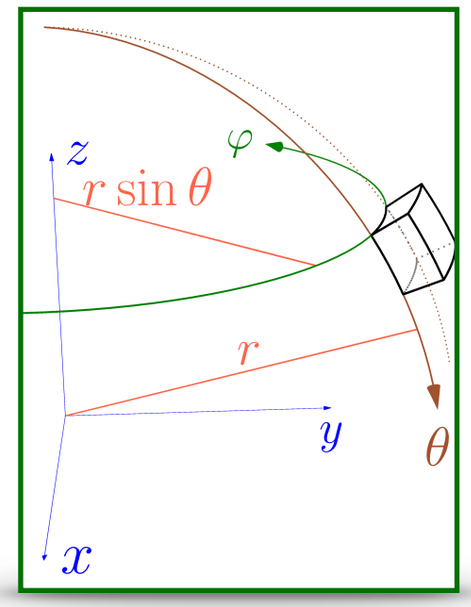


Coordenadas esféricas

$$\mathrm{d}\vec{\ell} = \mathrm{d}r\,\hat{r} + r\,\mathrm{d}\theta\,\hat{\theta} + r\sin\theta\,\mathrm{d}\varphi\,\hat{\varphi}$$



$$\vec{\boldsymbol{\nabla}}T = \frac{\partial T}{\partial r}\hat{r} + \frac{1}{r}\frac{\partial T}{\partial \theta}\hat{\theta} + \frac{1}{r\sin\theta}\frac{\partial T}{\partial \varphi}\hat{\varphi}$$

$$\vec{\boldsymbol{\nabla}} \times \vec{\mathbf{v}} = \frac{1}{r\sin\theta}\left(\frac{\partial(\sin\theta v_\varphi)}{\partial\theta} - \frac{\partial v_\theta}{\partial\varphi}\right)\hat{r} + \frac{1}{r}\left(\frac{1}{\sin\theta}\frac{\partial v_r}{\partial\varphi} - \frac{\partial(r v_\varphi)}{\partial r}\right)\hat{\theta} + \frac{1}{r}\left(\frac{\partial(r v_\theta)}{\partial r} - \frac{\partial v_r}{\partial\theta}\right)\hat{\varphi}$$

$$\vec{\boldsymbol{\nabla}} \cdot \vec{\mathbf{v}} = \frac{1}{r^2}\frac{\partial(r^2 v_r)}{\partial r} + \frac{1}{r\sin\theta}\frac{\partial(\sin\theta v_\theta)}{\partial\theta} + \frac{1}{r\sin\theta}\frac{\partial v_\varphi}{\partial\varphi}$$