Proof of $\vec{\nabla}\cdot(\phi\vec{A}) = \vec{A}\cdot\vec{\nabla}\phi + \phi\,\vec{\nabla}\cdot\vec{A}$

$$\vec{\nabla}\cdot(\phi\vec{A}) = \partial_i(\phi A_i) = \phi\,\partial_i A_i + A_i\,\partial_i\phi$$
$$= \phi\,\vec{\nabla}\cdot\vec{A} + (\vec{A}\cdot\vec{\nabla})\,\phi$$

which is trivial