

- We wish to expand $\vec{\nabla}(\vec{A} \cdot \vec{r})$ where \vec{A} is a constant vector

using D04

$$\vec{\nabla}(\vec{A} \cdot \vec{r}) = (\vec{A} \cdot \vec{\nabla})\vec{r} + \vec{A} \times (\vec{\nabla} \times \vec{r}) + (\vec{r} \cdot \vec{\nabla})\vec{A} + \vec{r} \times (\vec{\nabla} \times \vec{A})$$

$$= (\vec{A} \cdot \vec{\nabla})\vec{r} + \vec{A} \times (\vec{\nabla} \times \vec{r}) \quad \text{using } \vec{A} \text{ constant}$$

$$= (\vec{A} \cdot \vec{\nabla})\vec{r}$$

using D14

$$= \vec{A}$$

using D15