PROBLEMA GUÍA I | #10

La componente i-ésima de la operación $\nabla\psi(r)$, donde $r = |\vec{r}|$, está dada por:

$$(\nabla\psi)_i = \partial_i \psi(r) = \frac{\partial}{\partial x_i}\psi(r) = \underbrace{\frac{\partial r}{\partial x_i}\frac{\partial \psi(r)}{dr}}_{\text{Regla de la cadena}}$$

$$(\nabla\psi(r))_i = \partial_i r \frac{d\psi(r)}{dr}$$

$$(\nabla\psi(r))_i = \frac{x_i}{r}\frac{d\psi(r)}{dr}$$

$$\Downarrow$$

Vectorialmente tenemos que:

$$\nabla\psi(r) = \frac{\vec{r}}{r}\frac{d\psi(r)}{dr}$$

$\therefore$ $\nabla\psi(r)$ es paralelo a $\vec{r}$.