

PHY 711 – Homework # 20

Start reading Chap. 9 in **Fetter and Walecka**.

1. Consider a velocity field $\mathbf{v}(\mathbf{r},t)$. “Derive” the identity

$$(\mathbf{v} \cdot \nabla) \mathbf{v} = \nabla \left(\frac{1}{2} v^2 \right) - \mathbf{v} \times (\nabla \times \mathbf{v}).$$