All the problems are from the text book by Griffiths.

• **Vector Analysis:**

1. Problem 1.13 (a), (b), and (c).
2. Problem 1.16
3. Problem 1.19
4. Problem 1.21 only part (b). [Hint: compute the x-component explicitly and deduce the others by symmetry.]
5. Prove that: \( \nabla \cdot (\nabla \times \mathbf{V}) = 0 \) for an arbitrary vector field \( \mathbf{V}(\mathbf{r}) \).
6. Prove that: \( \nabla \times (\nabla F) = 0 \) for an arbitrary scalar field \( F(\mathbf{r}) \).
7. Problem 1.37 [Hint: Start with Fig. 1.36 on p. 38 and use trigonometry.]
8. Problem 1.41 [Hint: This time use Fig. 1.42 on p. 44.]
9. Problem 1.50
10. Problem 1.51