Week 6 Solutions

1. True
2. 0
3. 3x
4. that the region encloses a net positive charge of 3 units
5. \((\nabla \times f) \cdot \vec{D}\)
6. its divergence is zero everywhere
7. its curl is zero everywhere
8. is proportional to inverse square of the distance from the charge
9. False
10. \(0 \neq 0\)
11. \((\nabla f) \times \vec{D} + f\nabla \times \vec{D}\)
12. \(\nabla \cdot \vec{E} = \rho / \varepsilon_0\)
13. \(\nabla \cdot \vec{B} = 0\)
14. \(\nabla \times \vec{B} = \mu_0 \vec{J}\)
15. Magnitude doubles
16. z-direction