PHYS 704 - Derivatives.

1. Find the electric and magnetic fields appropriate for radiation from

$$\Phi(\vec{x},t) = \frac{1}{4\pi\epsilon_0 r}\left\{Q(t_0) + \frac{\hat{r}\cdot\dot{\vec{p}}(t_0)}{c} + \frac{\hat{r}\cdot\vec{p}(t_0)}{r}\right\}$$

and

$$\vec{A}(\vec{x},t) = \frac{\mu_0}{4\pi r}\dot{\vec{p}}(t_0)$$

by working out explicitly any derivatives you might encounter.