

1. Find the amount of total power radiated from an accelerated charged particle.

$$[\equiv \text{Larmor's Equ}^n]$$

2. Assuming that electron is always in a nearly circular orbit and that the rate of radiation is well approximated by classical electro-dynamics, compute how long time electron will take to spiral into the the origin for hydrogen atom?

$$[\text{electron radius} \sim 2.8 \times 10^{-15} \text{ m}, \text{ atom radius} \sim 5.3 \times 10^{-11} \text{ m}.]$$

3. Find the separation between the bright and dark fringes in double-slit experiment with light wave.

4. A time average of $f(t)$ is defined as, $\overline{f} = \frac{\int_0^{2\pi} dt f(t)}{\int_0^{2\pi} dt}$.
Show, $\overline{\cos^2(\omega t - x)} = \frac{1}{2}$ & $\overline{\cos(\omega t - x)} = 0$.