

1. Griffiths: Problems 2.3 to 2.8 (Use the integral formula to compute the electric field)
2. Griffiths: Problems 2.9, 2.10, 2.15, 2.18
Answers:
3. Griffiths: Problems 2.21, 2.23, 2.26, 2.27
4. Jackson: Problems 1.1, 1.2, 1.3, 1.4, 1.5

Some answers

Griffiths (2.3) $\frac{\lambda}{4\pi\epsilon_0}[(L/z\sqrt{L^2+z^2})\mathbf{k} - (1/z\sqrt{L^2+z^2} - 1/2z)\mathbf{i}]$

Griffiths (2.5) $\sigma Rz/2\epsilon_0(R^2+z^2)^{3/2}$

Griffiths (2.6) $\frac{\sigma}{2\epsilon_0}[1 - z/\sqrt{R^2+z^2}]$

Griffiths (2.9) (a) $\rho(r) = 5k\epsilon_0 r^2$; (b) $4\pi k\epsilon_0 R^5$

Griffiths (2.15) $\mathbf{E} = 0$ if $r < a$. $\mathbf{E} = \hat{\mathbf{r}}(k/\epsilon_0)(r-a)/r^2$ if $a < r < b$. $\mathbf{E} = \hat{\mathbf{r}}(k/\epsilon_0)(b-a)/r^2$ if $b < r$. $|\mathbf{E}|$ is increasing at $r = a$, has a maximum at $r = 2a$ if $b > 2a$.

Griffiths (2.18) $(\rho/3\epsilon_0)\mathbf{d}$

Griffiths (2.26) $(\rho h/2\epsilon_0)(\log(\sqrt{2}+1) - 1)$

Jackson (1.3) (a) $(1/4\pi R^2)\delta(r-R)$; (b) $(1/2\pi R)\delta(r-b)$ (c) $(Q/\pi R^2)\delta(z)\Theta(R-r)$ (d) $(Q/\pi R^2 r)\delta(\theta - \pi/2)\Theta(R-r)$

Jackson (1.4) $q\delta(\mathbf{r}) - (q\alpha^3/8\pi)e^{-\alpha r}$