Answers to practice problems of Tutorial – 4

Problem 4.5:

$$F = \frac{1}{2\pi\varepsilon_0}\frac{q^2}{4}\left[\left(\frac{1}{(a-x)^2}+\frac{1}{(2a-x)^2}+\frac{1}{(3a-x)^2}+\cdots\right)-\left(\frac{1}{x^2}+\frac{1}{(a+x)^2}+\frac{1}{(2a+x)^2}+\cdots\right)\right]$$

Problem 4.6:

$$C = \frac{2\pi\varepsilon_0}{\ln\left(\frac{b}{a}\right)}$$

Problem 4.7:

$$V(x,y,z) = \frac{\lambda}{4\pi\varepsilon_0}\ln\left[\frac{(y+a)^2+z^2}{(y-a)^2+z^2}\right]$$