

	YTÜ - Fen-Edebiyat Fakültesi FİZİK Bölümü				NOT TABLOSU				
					1. S		2. S		TOPLAM
Adı Soyadı									
Öğrenci Numarası				Grup No	1				
Bölümü						Sınav Tarihi		11.08.2021 12:00-14:00	
Dersin Adı		Classical Electromagnetic Theory 1 Quiz1				Sınav Süresi	100 dak.	Sınav Yeri	
Dersi veren Öğretim Üyesinin Adı Soyadı		Çetin TAŞSEVEN					İmza		
YÖK nun 2547 sayılı Kanunun Öğrenci Disiplin Yönetmeliğinin 9. Maddesi olan “Sınavlarda kopya yapmak ve yaptırmak veya buna teşebbüs etmek” fiili işleyenler bir veya iki yarıyıl uzaklaştırma cezası alırlar.									

You must show all of your work explicitly and clearly, and must explain your reasoning to get full credit.

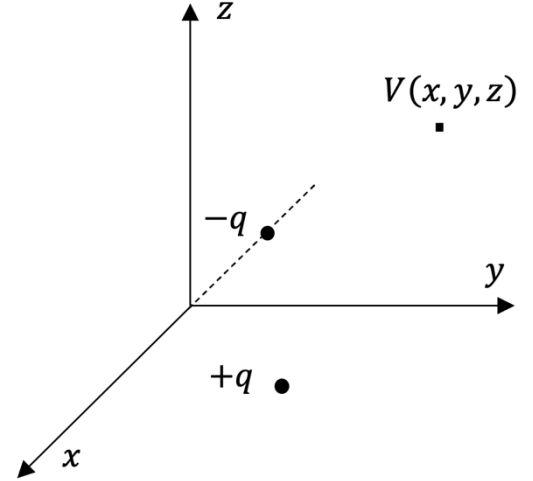
QUESTIONS

Q1. (35/100)

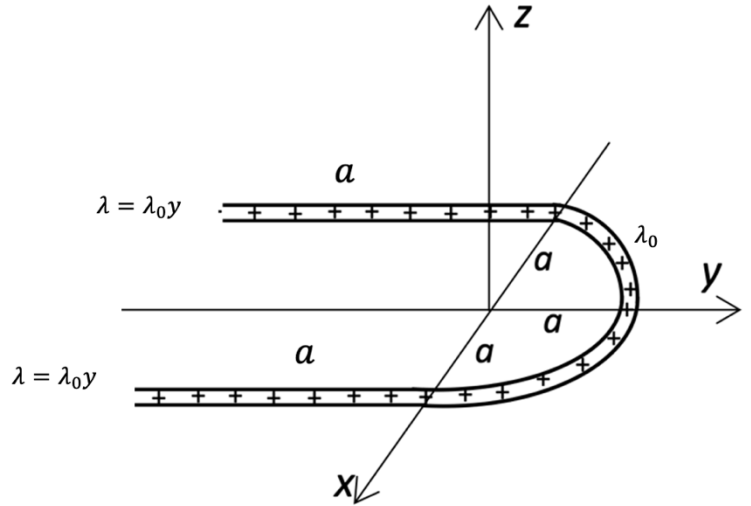
A) Find the electric potential $V(x, y, z)$ at point in cartesian coordinates due to a dipole placed on xy plane as shown in the figure. The coordinates of the negative and positive charges are $(-a, 0, 0)$ and $(a, b, 0)$, respectively.

B) Find the electric field vector $\vec{E}(x, y, z)$.

C) what is the work to be done to move $+q$ from its original position to infinite?



Q2) (30/100) Two parallel line charge of length a with nonuniform density $\lambda = \lambda_0 y$ are joined by a half-circle line charge of radius a with uniform density λ_0 on xy plane as shown. Find the electric potential at a point on the z -axis.



Q3) (35/100) The potential inside an insulating solid sphere of radius R is given as

$V(r) = ar^2 + b$. Where a and b are constant.

a) Find the charge density of the sphere.

b) Find the energy of the shell using $W = \frac{1}{2} \int V(r) dq$

c) Find the energy of the shell using $W = \frac{\epsilon_0}{2} \int E^2 d\tau$