Homework 4.

1) Four equal point charges, $Q = 10\mu C$, are located at x = 1, 2, 3, and 4 m. Find the potential at the origin.

2) Find the work done by an external source in moving a point charge $Q = -10\mu C$ from the origin to (5, 0, 0) m in the field
$$\bar{E} = (x + y)\hat{a}_x + x\hat{a}_y$$
for a path along the x axis.

3) Given the field $\bar{E} = -\dfrac{10}{r^2}\hat{a}_r$ (v/m) in spherical coordinates. Find the potential of point $(1m, \pi/2, \pi)$ with respect to $(2m, \pi/3, \pi/2)$.

4) Given the potential function $V = 5x + 8z$ in free space. Find the electric field $\bar{E}$.