Problems For Practice

1. A uniform electric field of 20 NC^{-1} exists in the vertically downward direction. Determine the increase in the electric potential as one goes up through a height of 50 cm. (Ans. 10 V)

2. A uniform electric field of 30 NC^{-1} exists along the X-axis. Calculate the potential difference $V_B - V_A$ between the points A (4 m, 2 m) and B(10 m, 5 m). (Ans. - 180 V)

3. An electric field $\vec{E} = 20\,\hat{i} + 30\,\hat{j}$ NC^{-1} exists in free space. If the potential at the origin is taken zero, determine the potential at point (2 m, 2 m). (Ans. -100 V)

4. The electric field in a region is given by $\vec{E} = \frac{A}{x^3}\hat{i}$ Write the 51unit for A. Write an expression for the potential in the region assuming the potential atinfinity to be zero. (Ans. $Nm^3C^{-1}, \frac{A}{2x^2}$)

5. Figure 2.23 shows some equipotential surfaces. What can you say about the magnitude and the direction of the electricfield ? (Ans. $E = \frac{6}{r^2}\,Vm^{-1}$, radially outward)