5 An isolated conducting sphere of radius r is given a charge $+Q$. This charge may be assumed to act as a point charge situated at the centre of the sphere, as shown in Fig. 5.1.

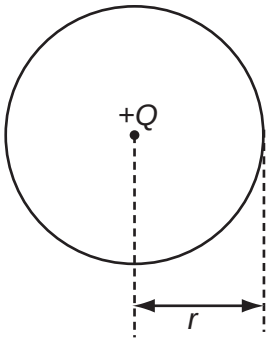


Fig. 5.1

Fig. 5.2. shows the variation with distance x from the centre of the sphere of the potential V due to the charge $+Q$.

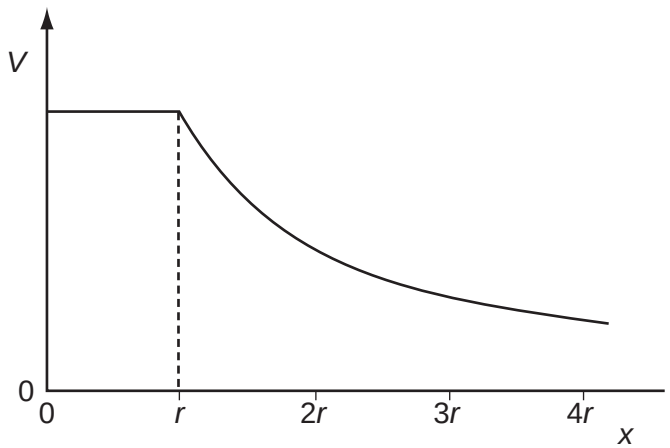
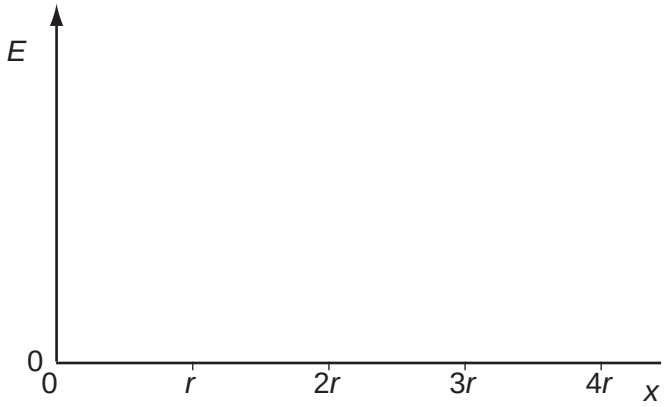


Fig. 5.2

(a) State the relation between electric field and potential.

.....[1]

(b) Using the relation in **(a)**, on Fig. 5.3 sketch a graph to show the variation with distance x of the electric field E due to the charge $+Q$.



[3]

Fig. 5.3