

- 2 (a) The magnitude of the gravitational potential on the surface of a planet of radius R is ϕ . The planet can be considered to be an isolated sphere.

On Fig. 2.1, sketch the variation of the gravitational potential with distance x from the centre of the planet for values of x between R and $4R$.

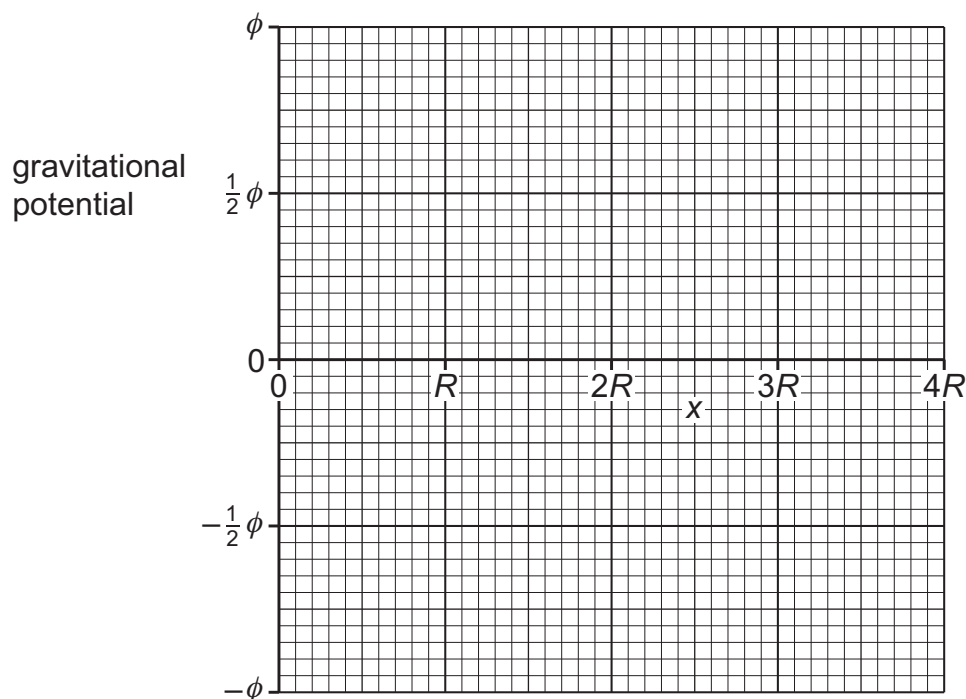


Fig. 2.1

[3]

- (b) A satellite is in a geostationary orbit above the Earth. At time $t = 0$, the magnitude of the gravitational potential due to the Earth at the location of the satellite is ϕ .

On Fig. 2.2, sketch the variation of the gravitational potential due to the Earth at the location of the satellite for values of t between $t = 0$ and $t = 24$ hours.

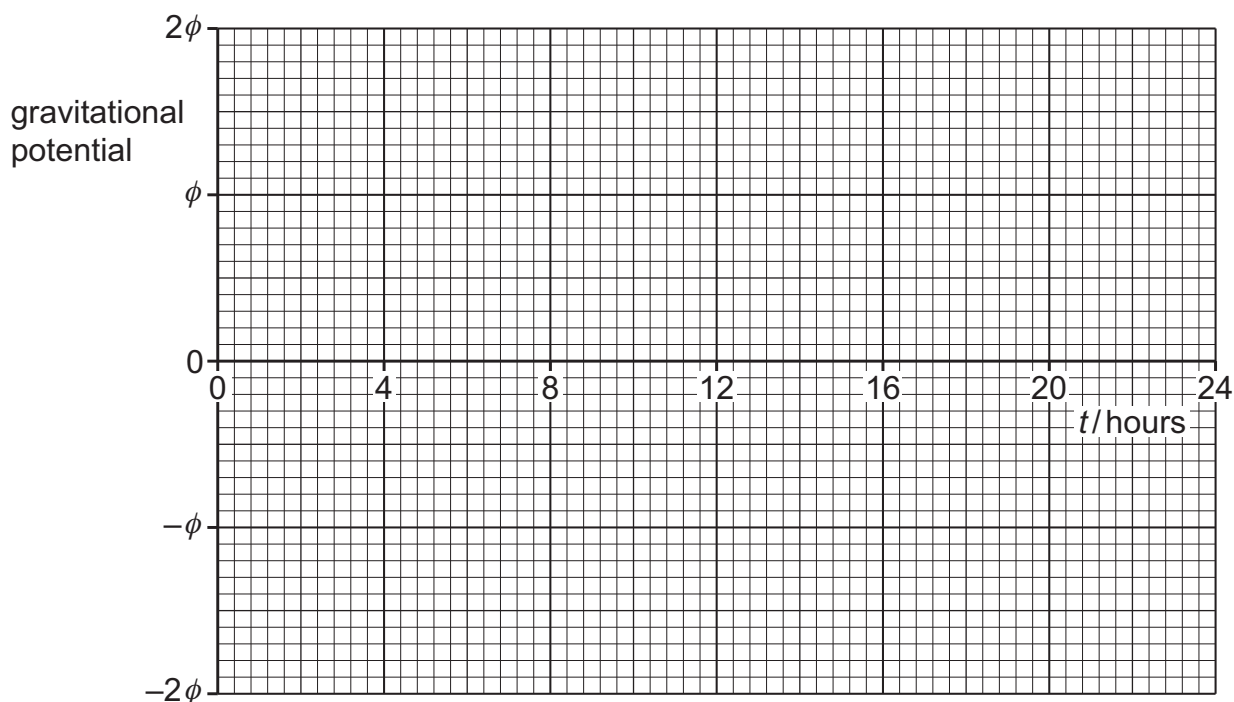


Fig. 2.2

[2]

(c) The electric potential difference (p.d.) between two parallel plates is V , as shown in Fig. 2.3.

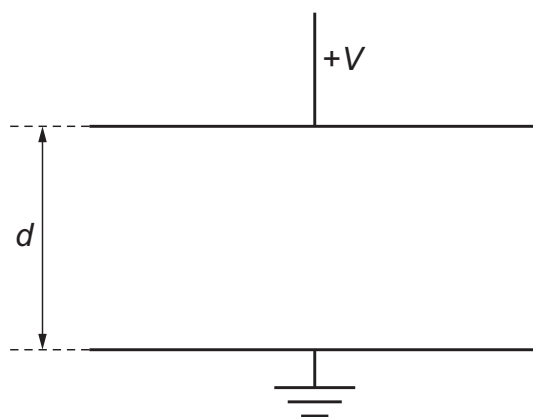


Fig. 2.3

The distance between the plates is d . The region between the plates is a vacuum.

On Fig. 2.4, sketch the variation of the electric potential with distance from the positive plate.

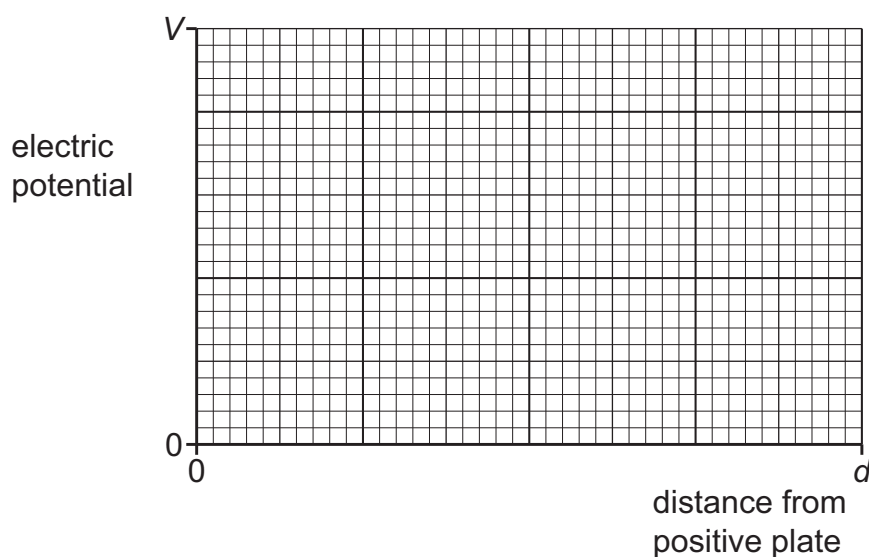


Fig. 2.4

[2]

[Total: 7]