

Problem statement An unidentified object moves along the s -axis, with displacement $s = s(t)$ (meters), velocity $v = v(t)$ (m/sec) and acceleration $a = a(t)$ (m/sec²). It so happens that the velocity and displacement are related by the equation $v = \sqrt{8s + 16}$. Moreover, at the instant $t = 0$, the object is observed at $s = 6$.

- a) Show that a is constant, and find its value.
- b) Graph v as a function of s .
- c) Graph v as a function of t .