

Problem 2.1

Time-dependent force

A 5-kg mass moves under the influence of a force $\mathbf{F} = (4t^2\hat{\mathbf{i}} - 3t\hat{\mathbf{j}})$ N, where t is the time in seconds (1 N = 1 newton). It starts at rest from the origin at $t = 0$. Find: (a) its velocity; (b) its position; and (c) $\mathbf{r} \times \mathbf{v}$, for any later time.