A charged particle \((m = 3\, \text{kg}, \ q = 1\, \mu\text{C})\) is launched at \(t_0 = 0\) with initial speed \(v_0 = 2\, \text{m/s}\) in an electric field of magnitude \(E = 6 \times 10^6\, \text{N/C}\) as shown.

(a) Find the position of the particle at \(t_1 = 3\, \text{s}\).

(b) By what angle does the velocity vector turn between \(t_0 = 0\) and \(t_1 = 3\, \text{s}\)?