Particle experiencing soft Coulomb kick

A particle with charge $Q_1$ and mass $m_1$ moves at very high velocity $v_1$ along a (nearly) straight line that passes at a distance $b$ from a particle with charge $Q_2$ and mass $m_2$, which is initially at rest. The assumptions are that the two particles interact via a Coulomb central force and that the second particle does not change its position significantly during the encounter.

(a) Find the direction in which the second particle will move after the encounter.
(b) Find the energy $\Delta E$ transferred from the first to the second particle during the encounter.

Solution: