(a)
$$q = (1 - e)a = 0.933 \text{ AU}$$
$$Q = 1.017 \text{ AU}$$

(b)
To do part (b) you will need to use Equation (1.14). The results are
$$v_q = 30.3 \text{ km/s}$$
and
$$v_Q = 29.2 \text{ km/s}.$$