24. (a) Converting from hours to seconds, we find the angular velocity (assuming it is positive) from Eq. 11-18:

$$\omega = \frac{v}{r} = \frac{\left(2.90 \times 10^4 \,\mathrm{km/h}\right)\left(\frac{1.00\,\mathrm{h}}{3600\,\mathrm{s}}\right)}{3.22 \times 10^3 \,\mathrm{km}} = 2.50 \times 10^{-3}\,\mathrm{rad/s} \ .$$

(b) The radial (or centripetal) acceleration is computed according to Eq. 11-23:

$$a_r = \omega^2 r = \left(2.50 \times 10^{-3}\,\mathrm{rad/s}\right)^2 \left(3.22 \times 10^6\,\mathrm{m}\right) = 20.2 \ \mathrm{m/s^2} \ .$$

(c) Assuming the angular velocity is constant, then the angular acceleration and the tangential acceleration vanish, since

$$\alpha = \frac{d\omega}{dt} = 0 \quad \text{and} \quad a_t = r\alpha = 0 \ .$$