98. (a) The linear speed at $t = 15.0\,\mathrm{s}$ is

$$v = a_t t = \left(0.500\,\mathrm{m/s^2}\right)(15.0\,\mathrm{s}) = 7.50\ \mathrm{m/s}\ .$$

The radial (centripetal) acceleration at that moment is

$$a_r = \frac{v^2}{r} = \frac{(7.50\,\mathrm{m/s})^2}{30.0\,\mathrm{m}} = 1.875\ \mathrm{m/s^2}\ .$$

Thus, the net acceleration has magnitude:

$$a = \sqrt{a_t^2 + a_r^2} = \sqrt{\left(0.500\,\mathrm{m/s^2}\right)^2 + \left(1.875\,\mathrm{m/s^2}\right)^2} \ = \ 1.94\ \mathrm{m/s^2}\ .$$

(b) We note that $\vec{a}_t \parallel \vec{v}$. Therefore, the angle between $\vec{v}$ and $\vec{a}$ is

$$\tan^{-1}\left(\frac{a_r}{a_t}\right) = \tan^{-1}\left(\frac{1.875}{0.5}\right) = 75.1^\circ$$

so that the vector is pointing more toward the center of the track than in the direction of motion.