Exercise 9-14

(a) $\alpha = 2\pi \frac{rad}{s^2} \times \frac{1\,rev}{2\pi\,rad} = 1.00 \frac{rev}{s^2}$

$\omega_0 = \frac{600\,rev}{min} \times \frac{1\,min}{60.0\,s} = 10.0 \frac{rev}{s}$

$\omega = \omega_0 + \alpha t$

$= 10.0 \frac{rev}{s} + \left(1.00 \frac{rev}{s^2}\right)(60.0\,s)$

$= 70.0 \frac{rev}{s} \times \frac{60.0\,s}{1\,min}$

$= 4.20 \times 10^3 \frac{rev}{min}$

For rad/s: $\omega = 70.0 \frac{rev}{s} \times \frac{2\pi\,rad}{1\,rev} = 4.40 \times 10^2\,rad/s$

(b) $\theta = \omega_0 t + \frac{1}{2}\alpha t^2$

$= \left(10.0 \frac{rev}{s}\right)(60.0\,s) + \frac{1}{2}\left(1.00 \frac{rev}{s^2}\right)(60.0\,s)^2$

$= 2.40 \times 10^3\,rev$