1. $f = \frac{1560 \text{ rpm}}{60 \text{ s}} = 26 \frac{\text{rev}}{\text{s}}$

$s = 18.5 \text{ m}$

$v = 40.2 \text{ m/s} \qquad t = \frac{s}{v} = \frac{18.5 \text{ m}}{40.2 \text{ m/s}} = 0.46 \text{ s}$

$f \cdot t = \text{total rev}$

$26(0.46) = \boxed{12.0 \text{ rev}}$

2.

$t = 7.00\,s$

$s = 12.0\,cm = 0.120\,m$

$r = 30.0\,cm = 0.300\,m$

$$\theta = \frac{s}{r} = \frac{.120}{.300} = 0.400\,rad$$

3. a. $v = ?$

$\omega = 125 \frac{rad}{s}$

$\alpha = 4.00 \frac{rad}{s^2}$

$r = .450\,m$

$v = \omega r$

$v = 125(.450)$

$v = 56.3\,m/s$

36.) $125\ \text{rad/s} - 4.00\ \text{rad/s}\,t = 0\ \text{rad}$

$$\frac{125\ \text{rad/s}}{4.00} = \frac{4.00\ \text{rad/s}\,t}{4.00}$$

$$t = 31.25 \approx \boxed{31.3}$$

3. c. $\theta = ?$

$v^2 = u^2 + 2as$

$\omega_i = 125 \frac{rad}{s}$

$\alpha = -4.00 \frac{rad}{s^2}$

$\omega_f = 0 \frac{rad}{s}$

$\omega_f^2 = \omega_i^2 + 2\alpha\theta$

$\theta = \frac{\omega_f^2 - \omega_i^2}{2\alpha}$

$\theta = \frac{-125^2}{2(-4)} = 1950 \text{ rad}$

4. a. $V = ?$

$d = 1.20\,m$

$r = \frac{d}{2} = 0.60\,m$

$f = \frac{215\ rpm \left| \frac{1\ min}{60\ s} \right.}{} = 3.58\overline{3}$

$V = \omega r$

$V = 2\pi f r = \boxed{13.5\ m/s}$

$2\pi(3.583)(0.60)$

4b $f_f = 15.25$

$f_0 = 3.583$

$$\frac{2\pi f_f - 2\pi f_0}{t}$$

$$= \boxed{1.22 \frac{rad}{s^2}}$$

4c) $s = ?$

$a = a_r = .732\ m/s$

$v = \omega r = 2\pi f r = 13.$

$r = \frac{1.20m}{2} = 0.6m$

$f = \frac{215 rpm \mid 1 min}{60 s} = 3.58 \frac{rev}{s}$

$t = 60s$

$\alpha = 1.22 \frac{rad}{s^2}$

$s = ut + \frac{1}{2}at^2$

$s = 13.5(60) + (.5)\left(\frac{.732}{(60)^2}\right)$

$s = 2130m$

5a $a = ?$ $a = \frac{(2\pi 5) - (2\pi 3.75)}{60}$

$f_1 = 300\,rpm = 5\,\frac{rev}{s}$

$f_2 = 225\,rpm = 3.75\,\frac{rev}{s}$

$t = 60s$

$r = 2.95m$

$a = 0.131\,\frac{rad}{s^2}$

$a = \frac{\omega_f - \omega_i}{t}$

$a = \frac{2\pi f_2 - 2\pi f_1}{t}$

5b) $a = \alpha r$

$a = (0.131)(2.95)$

$\boxed{a = 0.386 \frac{m}{s^2}}$

5c) $\theta = ?$

$$\theta = \frac{(\omega_i + \omega_f)t}{2}$$

$$\theta = \frac{(2\pi f_1 + 2\pi f_2)t}{2}$$

$$\theta = \frac{(2\pi 5 + 2\pi 3.75)60}{2}$$

$$\theta = 1650 \text{ rad}$$

6a.

$V = ?$

$r = 25\,cm = .25\,m$

$\omega = 1.20 \frac{rad}{s}$

$v = \omega r$

$v = (1.20)(.25) = \boxed{0.30\,m/s}$

6.b)

$$\theta = \frac{(\omega_i + \omega_f)}{2} t$$

$\omega_i = 1.20 \frac{rad}{s}$

$\omega_f = -2.00 \frac{rad}{s}$

$t = 5.00\,s$

$$\theta = \frac{(1.2 - 2)}{2} 5$$

$$\theta = 2\,rad$$

8 a) $\alpha = ?$

$f_i = \frac{1850 \text{ rpm} \mid 1 \text{ min}}{60 \text{ s}} = 30.8\overline{3} \frac{\text{rev}}{\text{s}}$

$t = 3.00 \text{ min} = 180 \text{ s}$

$\omega_f = 0 \frac{\text{rad}}{\text{s}}$ $\quad \alpha = \frac{2\pi f - \omega_f}{t} = \boxed{1.08 \frac{\text{rad}}{\text{s}^2}}$

8 b.) $\theta = ?$

$f = 30.83 \frac{rev}{s}$

$t = 180 s$

$\theta = \frac{(\omega_i + \omega_f)t}{2}$

$\theta = \frac{(2\pi f + \omega_i)t}{2}$

$\theta = \frac{2\pi f \cdot t}{2}$

$\theta = 17400 \, rad$

9) $\omega = 157.1 \frac{rad}{s}$

$\alpha = -1.785 \frac{rad}{s^2}$

$t = 60\,s$

$$\omega_f = \omega_i + \alpha t$$

$$\omega_f = 157.1 + (-1.785)60$$

$$\boxed{\omega_f = 50 \frac{rad}{s}}$$