A rotating wheel has an initial angular velocity of 30 rad/s at t = 0 s, and comes to a stop with an angular acceleration of -3 rad/s/s.

a) What angular displacement did the wheel make during this time?

$\omega_i = 30\ rad/s$

$\omega_f = 0\ rad/s$

$\alpha = -3\ rad/s^2$

$\Delta\theta = ?$

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

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

$= 150\ rad$

b) How long did it take to come to a stop?

$\omega_f = 0\ rad/s$

$\omega_i = 30\ rad/s$

$\alpha = -3\ rad/s^2$

$t = ?$

$\omega_f = \omega_i + \alpha t$

$t = \frac{-\omega_i}{\alpha}$

$= 10\ s$