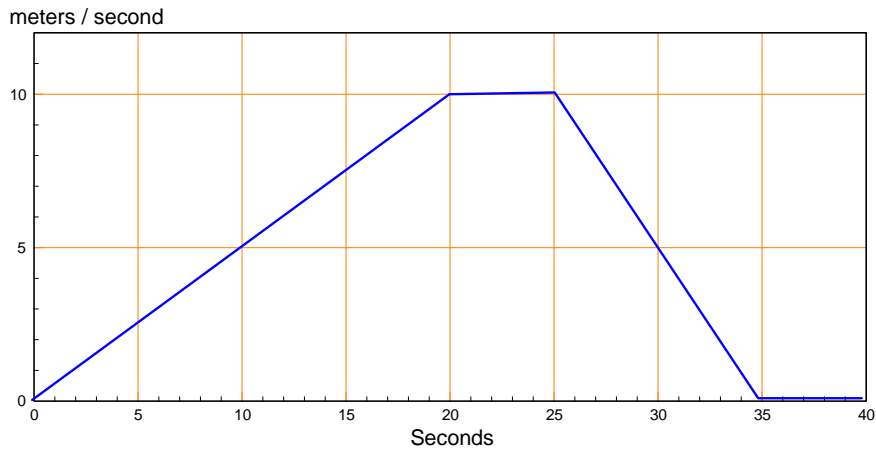# ECE 331 - Homework #10

DC Motors

A DC motor drives an electric scooter. Find the current and voltage required to produce the following speed vs. time. Assume:

- MotionTek SM341110 (http://www.motiontek.ca/dcservomotor.html)
- Kt = 0.2424 V / rads/sec = 0.2424 Nm/A
- Ra = 0.408 Ohms
- La = 3.185 mH
- Peak current = 40 Amps
- wheel radius = 40mm (80mm roller blade wheel)
- Scooter + driver mass = 100kg
- Motor rotational intertia = 0.000 03 kg m2

1) (30pt)

2) (30pt)