ECE 763
Homework #10

Problems:

1. Give a diagram showing the major elements of a resolver. Explain its function. What is the basic purpose of the resolver-to-digital converter electronics?

2. What is the repeatability error (in mm) in the Mitsubishi RM501 due to the resolution of the waist axis incremental encoder? (Assume the maximum error occurs when the arm is stretched out to 445 mm.)

3. To measure the output speed of a U12M4T DC permanent magnet motor, a small resistor (1/10 of the value of the armature resistance) is placed in series with the armature. With a voltage across the armature of 5 volts, the drop across the sense resistor is 0.1 volts. Draw a diagram of the configuration and calculate the speed at the output (after the gear) for this case in rad/sec. Assume an armature resistance value of 0.75 ohms and a back-emf constant of 0.101 volt-sec/rad (ignore the inductance). Use a gear ratio of 102.