1. As done for the Kelvin-Voigt model in class, derive the equation for the Maxwell model. Please show all your work.

2. Draw the response (force vs. displacement) of a Kelvin-Voigt to a triangle wave (i.e., a ramp up and a ramp down at the same rate). Let $V =$ the slope of triangle wave and $x_1$ the peak displacement occurring at $t_1$. Hint: determine force and displacement values at $t=0$, $t=0+$, $t=t_1$, $t=t_1+$, $t=t_2$.

3. A viscoelastic material undergoes a stress relaxation test with a physiologic ramp (i.e., it is not instantaneous) of 10mm in 1 second. The displacement is then held at 10mm. The force increases to 300N at one second and then relaxes to 100N over time. Plot the material and model response. Using these data and the Kelvin-Voigt model, estimate the stiffness and viscosity of the material.

4. Define pronation and supination. Why do these terms work well for the upper extremity but are potentially confusing for the lower extremity? Provide an example of one of these terms used in the popular media (print ad, web site, etc. – submit an electronic image or a URL). Comment on whether or not the term is being used correctly. Explain your thinking.

5. Find an example of a Kinect camera used for a non-gaming application. Write up a brief summary (1-2 paragraphs), including references and/or URLs.