1. Rewrite $-2\cos(3t) - 3\sin(3t)$ in the form $R\cos(\omega_0 t - \delta)$.

2. [3.7.6] A mass of 100 g stretches a spring 5 cm. If the mass is set in motion from its equilibrium position with a downward velocity of 10cm/s, and if there is no damping, (a) determine the position u of the mass at any time t. (b) When does the mass first return to its equilibrium position? (c) Determine the frequency, period, amplitude, and phase of the motion.

3. [3.7.11] A spring is stretched 10 cm by a force of 3 N. (Note: one Newton, denoted N, is $1\text{kg} \cdot \text{m/s}^2$.) A mass of 2 kg is hung from the spring and is also attached to a viscous damper that exerts a force of 3 N when the velocity of the mass is 5 m/s. If the mass is pulled down 5 cm below its equilibrium position and given an initial downward velocity of 10 cm/s, (a) determine its position u at any time t. (b) Find the quasi frequency μ and the ratio of μ to the natural frequency of the corresponding undamped motion.