1   1-D pendulum

A point particle, with mass m, pivots without friction on the end of a massless stretch-less stick of length l. There is a linear damping force on the particle that acts in the direction opposite the motion of the particle with a force of magnitude bv, where b is a constant and v is the speed of the particle. Draw a free body diagram of the particle, and apply Newton's 2nd law to find the ordinary differential equation of motion for θ for this 1-D pendulum shown below. Express your answer in terms of g, l, m, b, and, θ and its time derivatives.