1. (10 points)

a. (5 points) A mass of weight 1kg is connected to a spring with an unknown spring constant. There is no friction in the system. The mass is observed to oscillate with a **period** of 10 seconds. What is the spring constant?

b. (5 points) In a different system, a mass of weight 1kg is connected to a spring with spring constant 1 kg/s. There is friction in the system, and the mass is observed to oscillate with a **quasi-frequency** of 1/10 cycles per second. What is the coefficient of friction? Hint: A system that oscillates with frequency ω oscillates at a rate of $\omega/(2\pi)$ cycles per second.