

Name: \_\_\_\_\_

A mass,  $m = 1$ , is attached to a spring,  $k = 1$  and  $b = 1$ , that is fixed to the ceiling of an elevator. It is at rest,  $x(0) = 0$ , before the elevator accelerates upward; so it satisfies  $m\ddot{x} = -b\dot{x} - kx$  with  $\dot{x}(0) = 0$ . At  $t = 0$  the elevator accelerates upward with  $a = 10$  and continues to accelerate until  $t = 5$ . Clearly state what coordinate system you are using and determine where the mass is in this coordinate system at  $t = 5$ .