(b) (3 pts) Find the acceleration a of the weight at the moment it stops (just as it touches the water) and indicate whether its direction is upwards or downwards.

$F^{tot} = F^{gravity} + F^{spring}$

$$a = \frac{F^{tot}}{m} = \frac{-mg + k(l - l_0)}{m} = -9.8 + \frac{(56)(35)}{70}$$

$$= 18.2 \ \frac{met}{sec^2}$$

direction? upward

(c) (4 pts) After the weight stops (just as it touches the water), it again moves upward. If air drag and energy losses in the cord are negligible, the weight comes all the way back up to the edge of the railing where it again stops. Thus, in this idealization, the motion of the weight is periodic! Let $z(t)$ be the height of the weight above the water. Sketch below $z(t)$ for one period. Indicate the nature of the motion for various parts of the sketch. (You may find it helpful to answer parts d and e below before making the sketch.)