MEE 211: Homework # 2

At time $t = 0$, the rocket car shown below is at location $s = 0$, with zero speed. At this instant, the parking break is released and the car begins rolling downhill. At time $t = t_a$, the driver turns on the rocket which produces a constant thrust. At time $t = t_b$, when the car returns to its starting location, the driver turns the rocket off.

Draw relevant free body diagrams and then sketch plots of components of position $s(t)$, velocity $\dot{s}(t)$, and acceleration $\ddot{s}(t)$ as functions of time.Your plots do not have to be precise, but they should be qualitatively correct. All plots should have the same time scale. Use the vertical gray lines to align time dependent features of the plots.