Wyatt Whiting

MTH 323

Writing Assignment 3

In this situation, the cars are moving at a speed less than that associated with the maximum flow rate. This is because the relationship between car speed and flow rate is quadratic, with the equation reaching a maximum flow rate at some maximum density. If the density of cars is above this threshold, then the flow rate is below the optimal amount, so each car is moving slower than the speed associated with the optimum flow rate. In more “everyday” terms, the cars are moving slower because there are too many cars packed onto the road, causing traffic, and thus everyone has to slow down. The traffic signal can fix this problem. Since the traffic signal can control the rate at which cars enter the roadway after the it, then it can cause the car density to be at its optimum level, which causes the flow rate to be at its maximum possible value. Thus, the cars governed by the traffic signal will move faster than those without oversight from the signal.