



9. (14 points) On the day after Thanksgiving, the stores were mobbed with shoppers. In the local ToysWereU Store there were already 50 people in line when the security guards showed up at 6:50 a.m. The graph above shows the rate, R , in arrivals/minute at which people arrived after 6:50.

The store opens at 7:00 a.m., and the guards are to allow people into the store at a constant rate of 20 people per minute. Use this information and the graph to estimate the following:

(a) The length of the line (i.e. the number of people) at 7:00 when the guards begin letting people into the store.

(b) The length of the line at 7:20.

(c) The rate at which the line is growing at 7:10.

(d) The length of time a person who arrives at 7:00 has to stand in line.

(e) The time at which the line disappears.