Fundamentals of Traffic Operations and Control
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Exercise
Shockwave theory

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a) Consider a single-lane road of length $L = 300$ m with a traffic signal at the end. Calculate the average cycle link flow and density according to the generalized definitions, for the following values:

- Green time: $T_G = 30$ s

- Red time: $T_R = 30$ s

- Demand: $q = 600$ veh/h

and a triangular fundamental diagram with the parameters:

- Capacity: 1800 veh/h

- Critical density: 30 veh/km

- Jam density: 150 veh/km

   b) A vehicle traveling at speed v, overpasses a traffic stream traveling at speed v' and density k'. Identify the passing rate (i.e., vehicles passing per unit time).