

3.

The Student Union sells two types of Cola: Pepsi and Coke. If a person last purchased a Coke, there is a 90% chance that their next purchase will also be a Coke. However, if a person purchased a Pepsi Cola, the chance that their next purchase is a Pepsi Cola is only 70%.

If a person has just purchased a Coke, what is the probability that the same person will purchase Pepsi Cola two purchases from now.

[9 marks]

What are the conditions for the sale of Cola reaching a steady state?

[6 marks]

What are the steady state probabilities for the sale of the two types of Cola?

[9 marks]

If a person last purchased Pepsi Cola, how many purchases will that person make on average before purchasing a Coke?

[9 marks]