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1. The proportion of people in a large population who wear glasses is p.
A random sample of 4 people is taken from the population.
The random variable X represents the number of people in the sample who wear glasses.

(a) Show that $P(X > 2) = p^3(4 - 3p)$

(3)

Given that more than half of the population wear glasses and that the standard deviation of X is 0.96

(b) find $P(X > 2)$

(4)

Given also that more than 2 people in the sample wear glasses,

(c) find the probability that exactly 3 people in the sample wear glasses.

(2)

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Question 1 continued

Q1

(Total 9 marks)