

2. The discrete random variable $X \sim B(30, 0.28)$

(a) Find $P(5 \leq X < 12)$.

(2)

Past records from a large supermarket show that 25% of people who buy eggs, buy organic eggs. On one particular day a random sample of 40 people is taken from those that had bought eggs and 16 people are found to have bought organic eggs.

(b) Test, at the 1% significance level, whether or not the proportion p of people who bought organic eggs that day had increased. State your hypotheses clearly.

(5)

(c) State the conclusion you would have reached if a 5% significance level had been used for this test.

(1)

(Total for Question 2 is 8 marks)