4. Past evidence shows that 7% of pears grown by a farmer are unfit for sale.

This season it is believed that the proportion of pears that are unfit for sale has decreased. To test this belief a random sample of n pears is taken. The random variable Y represents the number of pears in the sample that are unfit for sale.

(a) Find the smallest value of n such that $Y = 0$ lies in the critical region for this test at a 5% level of significance.

(3)

In the past, 8% of the pears grown by the farmer weigh more than 180 g. This season the farmer believes the proportion of pears weighing more than 180 g has changed. She takes a random sample of 75 pears and finds that 11 of them weigh more than 180 g.

(b) Test, using a suitable approximation, whether there is evidence of a change in the proportion of pears weighing more than 180 g.
You should use a 5% level of significance and state your hypotheses clearly.

(6)

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