

4. Past information shows that 25% of adults in a large population have a particular allergy.

Rylan believes that the proportion that has the allergy differs from 25%

He takes a random sample of 50 adults from the population.

Rylan carries out a test of the null hypothesis $H_0: p = 0.25$ using a 5% level of significance.

- (a) Write down the alternative hypothesis for Rylan's test.

(1)

- (b) Find the critical region for this test.

You should state the probability associated with each tail, which should be as close to 2.5% as possible.

(4)

- (c) State the actual probability of incorrectly rejecting H_0 for this test.

(1)

Rylan finds that 10 of the adults in his sample have the allergy.

- (d) State the conclusion of Rylan's hypothesis test.

(1)