

AQA – Type I and Type II errors – A2 Further Mathematics Statistics

1. [June/2020/Paper_3/No.2](#)

Jamie is conducting a hypothesis test on a random variable which has a normal distribution with standard deviation 1

The hypotheses are

$$H_0 : \mu = 5$$

$$H_1 : \mu > 5$$

He takes a random sample of size 4

The mean of his sample is 6

He uses a 5% level of significance.

Before Jamie conducted the test, what was the probability that he would make a Type I error?

Circle your answer.

[1 mark]

0.0228

0.0456

0.0500

0.1587

2. June/2019/Paper_3/No.2

Amy takes a sample of size 50 from a normal distribution with mean μ and variance 16

She conducts a hypothesis test with hypotheses:

$$H_0 : \mu = 52$$

$$H_1 : \mu > 52$$

She rejects the null hypothesis if her sample has a mean greater than 53

The actual population mean is 53.5

Find the probability that Amy makes a Type II error.

Circle your answer.

[1 mark]

0.4%

3.9%

18.9%

45.0%