

A company manufactures copper pipes. The pipes are produced by two different machines,  $A$  and  $B$ . An inspector claims that the mean diameter of the pipes produced by machine  $A$  is greater than the mean diameter of the pipes produced by machine  $B$ . He takes a random sample of 12 pipes produced by machine  $A$  and measures their diameters,  $x$  cm. His results are summarised as follows.

$$\Sigma x = 6.24 \quad \Sigma x^2 = 3.26$$

He also takes a random sample of 10 pipes produced by machine  $B$  and measures their diameters in cm. His results are as follows.

0.48    0.53    0.47    0.54    0.54    0.55    0.46    0.55    0.50    0.48

The diameters of the pipes produced by each machine are assumed to be normally distributed with equal population variances.

Test at the 2.5% significance level whether the data supports the inspector's claim.

[9]