**Question 24** (4 marks)

In the margarine industry, alkenes are often hydrogenated to convert unsaturated oils into solid fats that have a greater proportion of saturated molecules.

(a) Using ethene as an example, write an equation for this reaction and state the type of reaction this represents.

\[
\text{C}_2\text{H}_4 + \text{H}_2\text{O} \rightarrow \text{C}_2\text{H}_5\text{OH} \quad \text{Ethene added with H}_2\text{O forms ethanol in a hydration reaction (addition).}
\]

(b) Describe a test that could be used to confirm that all the ethene has been converted.

Add bromine water to the solution and... take note of any changes to colour. If... there is a change in colour, this means... that the ethene was reacted and is therefore... still present in the solution and was not converted.

\[415\]

\[531\]