9 This question is about gas pressure.

(a) The diagram shows a cylinder containing propane gas.

(Source: © VitaminCo/Shutterstock)

The propane gas is stored in the cylinder at a pressure of 1.03×10^6 Pa.

(i) State the formula linking pressure, force and area.

(1)

(ii) The cylinder has an internal surface area of 1.13 m^2.

Calculate the force exerted on the walls of the cylinder by the propane gas.

(3)

force = ... N

(iii) Explain why the pressure exerted by the propane gas acts equally in all directions.

(2)

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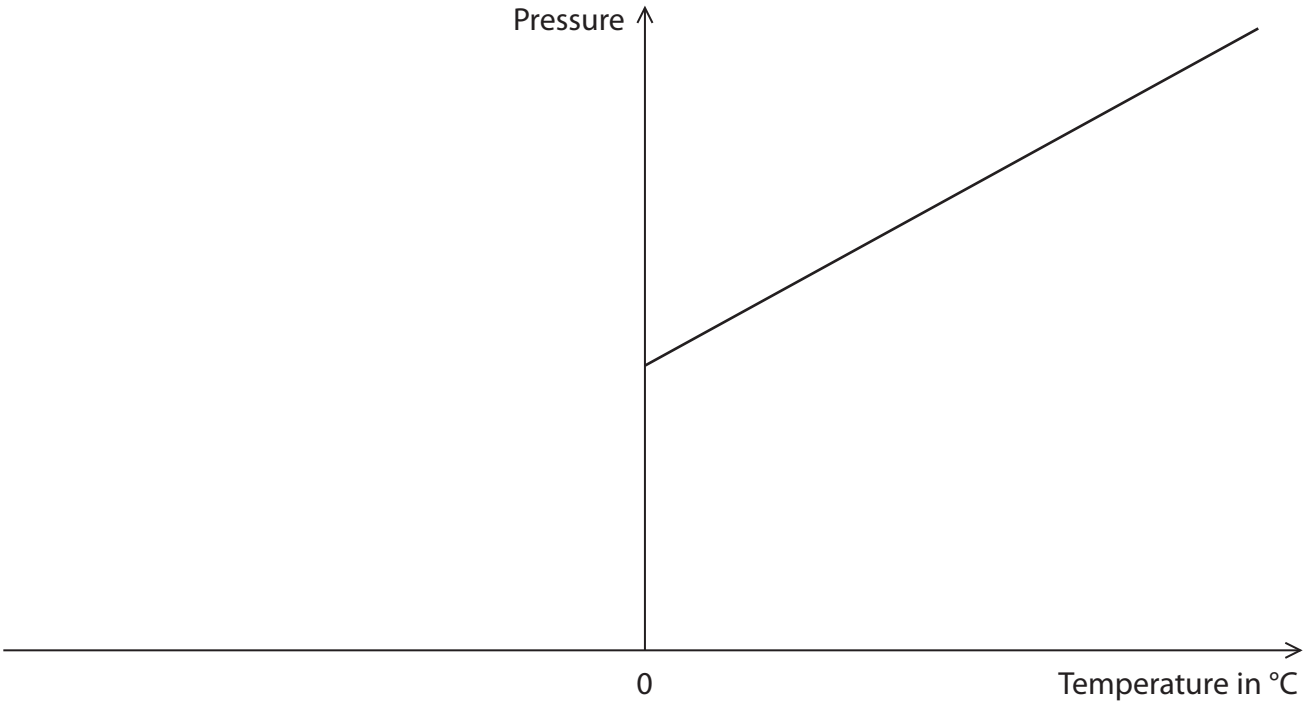
(b) The graph shows how the pressure of a gas varies with its temperature.



(i) Describe how the graph can be used to show that there is a minimum value of temperature, known as absolute zero.

(2)

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(ii) Give the value of absolute zero in °C.

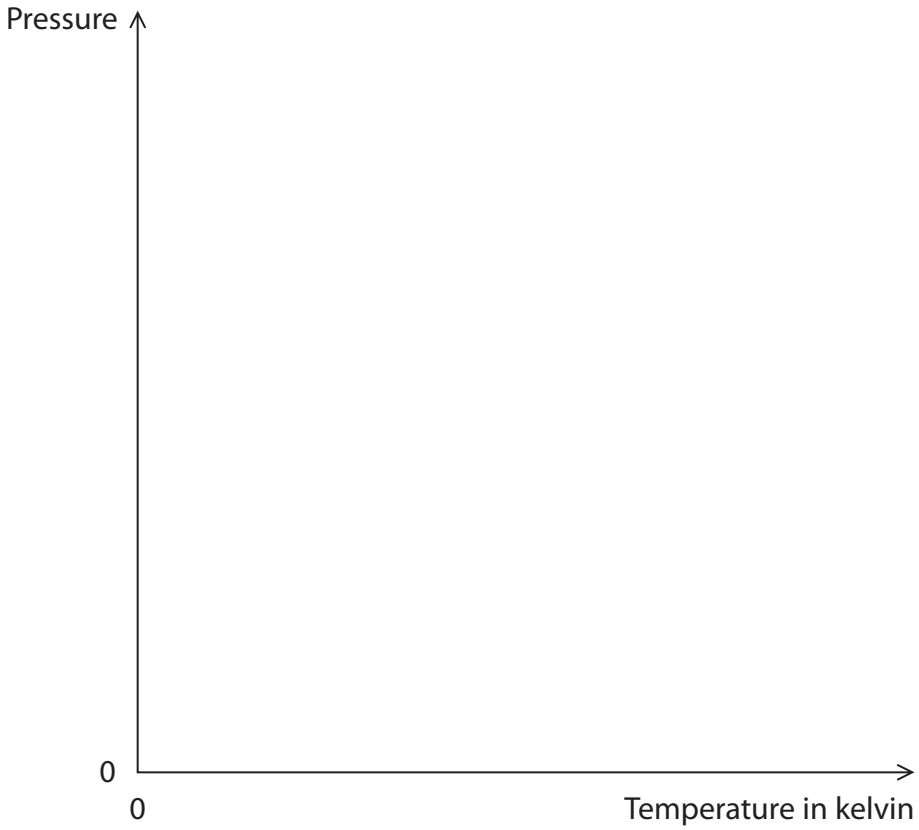
(1)

absolute zero = ... °C

(iii) Temperature can also be measured in kelvin.

On the axes below, sketch a graph to show how the pressure of a gas varies with its kelvin temperature.

(2)



(Total for Question 9 = 11 marks)