

# Exercise 3.4

Sunday, 26 April 2020 12:26

$$T = 273,15 \text{ K}$$

$$P = 1 \text{ atm} = 1.01 \times 10^5 \text{ Pa}$$

$$\rho_{\text{ice}} = 916.23 \text{ kg m}^{-3}$$

$$V_{\text{ice}} = \frac{m}{\rho_{\text{ice}}} = \frac{10}{916.23}$$

$$\rho_{\text{w}} = 999.84 \text{ kg m}^{-3}$$

$$V_{\text{w}} = \frac{m}{\rho_{\text{w}}} = \frac{10}{999.84}$$

$$m = 10 \text{ kg}$$

$$m = \rho V$$

$$dW = P dV$$

$$W = \int_{V_{\text{ice}}}^{V_{\text{w}}} P dV = P \int_{V_{\text{ice}}}^{V_{\text{w}}} dV$$

$$= P(V_{\text{w}} - V_{\text{ice}})$$

$$= 1.01 \times 10^5 \left( \frac{10}{999.84} - \frac{10}{916.23} \right)$$

$$= 1.01 \times 10^6 \left( \frac{1}{999.84} - \frac{1}{916.23} \right)$$

$$= -92.5 \text{ J}$$