ANSWER TO "TRY YOURSELF" PROBLEMS FROM STUDY SECTION 5.4 TO 5.6

Try Yourself 5.4 a

An air balloon is being inflated to its full extent by heating the air inside it. In the final stages of this process, the volume of the balloon changes from 4.00×10^6 L to 4.50×10^6 L by the addition of 1.3×10^8 J of heat energy. Assuming that the balloon expands against a constant pressure of 1.0 atm., calculate ΔU for the process. (Conversion factor: 1 L.atm = 101.3 J).

Try Yourself 5.4 b

A certain gas expands in volume from 2.0 L to 6.0 L at constant temperature. Calculate the work done by the gas (in joule and in kilojoule) if it expands (1) against a vacuum and (2) against a constant pressure of 1.2 atm. (Conversion factor: 1 L.atm = 101.3 J).