

10. We write $T = 273 \text{ K}$ and use Eq. 20-14:

$$W = (1.00 \text{ mol}) \left(8.31 \frac{\text{J}}{\text{mol} \cdot \text{K}} \right) (273 \text{ K}) \ln \left(\frac{16.8}{22.4} \right)$$

which yields $W = -653 \text{ J}$. Recalling the sign conventions for work stated in Chapter 19, this means an external agent does 653 J of work *on* the ideal gas during this process.