49. (*a*) The change in internal energy is given by Eq. 19-12. The nitrogen is diatomic.

 

 (*b*) The work is done at constant pressure.



 (*c*) The heat is added at constant pressure, and so Eq. 19-10b applies.

 

 

64. This is an example of heat conduction. The temperature difference can be calculated by Eq. 19-16a.

 