

### Group Work 3, Section 11.8

#### The Heated Cannonball

One of the wonderful things about the British army in the eighteenth century was that they were very polite. For example, during the Revolutionary War, during the battle of Valley Forge, it was standard practice for them to gently warm their cannonballs before firing them at the colonists. Suppose that a particular cannonball with radius 1 foot has a temperature distribution  $T(x, y, z) = 60(y^2 + z^2 - x^2)$  (where the center of the cannonball is at the origin).

1. What are the maximum and minimum temperatures in the cannonball, and where do they occur?

2. What is the shape of the wire frame used to apply the heat to the surface of the cannonball?