

◇♥ Heat Flow Out of a Sphere ♥◇

If $T(x, y, z)$ gives the temperature at (x, y, z) , then the net heat flow across a surface S is the flux of $\vec{F}(x, y, z) = -k\vec{\nabla}T(x, y, z)$, where the constant k is called the heat conductivity of the material.

Example 2: For $T(x, y, z) = 30 - \frac{1}{18}z^2$ and $k = 2$, compute the heat flow out of the region bounded by $x^2 + y^2 + z^2 = 9$.
