

(a)  $\partial T/\partial x = -54(2x)/(2 + x^2 + y^2)^2$ , so at  $(2, 6)$ ,  
 $T_x = -216/(2 + 4 + 36)^2 = -\frac{6}{49}$ .

(b)  $\partial T/\partial y = -54(2y)/(2 + x^2 + y^2)^2$ , so at  $(2, 6)$ ,  
 $T_y = -648/1764 = -\frac{18}{49}$ . Thus from the point  $(2, 6)$  the temperature is decreasing at a rate of  $\frac{6}{49}^\circ\text{C}/\text{m}$  in the  $x$ -direction and is decreasing at a rate of  $\frac{18}{49}^\circ\text{C}/\text{m}$  in the  $y$ -direction.