

Math 241 CALCULUS 3- Santilli

Homework Addendum section 14.6

- 1.) Find the path of a heat seeking probe traveling through the temperature field, $T(x,y,z) = 400 - 2x^2 - y^2 - 4z^2$ starting at the point (4,3,10). (Answer: $x = 4e^{-4kt}$, $y = 3e^{-2kt}$, $z = 10e^{-8kt}$)

- 2.) Find the angle of inclination of the tangent plane to the following surfaces at the indicated points:
 - a.) $3x^2 + 2y^2 - z = 15$, pt(2,2,5) (Answer: $\theta = 86^\circ$)
 - b.) $x^2 - y^2 + z = 0$, pt(1, 2,3) (Answer: $\theta = 77.4^\circ$)

- 3.) Find the point on the surface, $z = 3 - x^2 - y^2 + 6y$ where the tangent plane is horizontal. (Answer: point (0,3,12))