

## Math 124 Worksheet #9

October 30, 2007

1. If  $f(t) = (\tan t)^{2t}$ , what is the equation of the tangent line of  $f$  at the point  $(\frac{\pi}{4}, 1)$ ?
2. Suppose the position of a particle is given by  $s = te^{3-t}$  in inches at  $t$  seconds.
  - (a) When is the particle moving in the positive direction? Negative direction?
  - (b) When is the particle at rest?
  - (c) Where is the particle located at 3 seconds?
  - (d) What is the total distance travelled by the particle after 3 seconds? (Hint: See part (a).)
3. Find the derivative of  $g(x) = \frac{\sin^3 x \cdot \sqrt{1+x}}{(2-5x)^3}$ .