Math 122B020F14 Quiz 6 November 26, 2014 Name: _____

1 Let $f(t) = at^2e^{-bt}$, where a and b are nonzero constants.

(a) Find all critical points of $f(t)$

(b) Find the values of the parameter so that f has a critical point at $(5, 12)$

(c) For the resulting values of a and b, identify each critical point of $f(t)$ as a local maximum, local minimum. or neither.

2. A searchlight is positioned 10 meters from a sidewalk. A person is walking along the sidewalk at a constant speed of 2 meters per second. The searchlight rotates so that it shines on the person. Find the rate at which the searchlight rotates when the person is 25 meters from the searchlight.