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| Group Quiz 3Dusty Wilson Math 153 – Spring 2012 No work = no credit | **Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Reparametrize the curve  with respect to its arclength measured from the point  in the direction of increasing *t*.

Find the tangential and normal components of the acceleration vector of a particle with position function 

Find the equation of the osculating circle of the curve at 