

# Math 233 - Quiz 6

March 2, 2023

Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary.

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1. (8 points) A football is kicked off the ground at an angle of  $30^\circ$  above the horizontal and with an initial speed of 65 ft/sec. (Ignore air resistance in this problem and use  $g = 32 \text{ ft/s}^2$ .)

(a) Find the vector-valued function that gives the position of the football at time  $t$ .

(b) What horizontal distance does the football travel while it is in the air?

(c) Set up the definite integral that gives the length of the path of the football. Use your calculator to estimate the value of the integral.

(d) When does the football reach its maximum height?

2. (1 point) What can we say about the motion of a moving object if the normal component of its acceleration is zero?

3. (1 point) What can we say about the motion of a moving object if the tangential component of its acceleration is zero?