Math 233 - Quiz 6

Name _____

March 5, 2026

Score _____

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

1. (6 points) A baseball is hit from a height of 2.5 ft above the ground with an initial speed of 140 ft/sec and at an angle of 22° above the horizontal. Find the maximum height reached by the baseball. Then determine whether the ball will clear a 10-ft high fence located 375 ft from home plate. (Use $g = 32\,\text{ft/sec}^2$.)

2. (2 points) Let $\vec{r}(t) = 2t\,\hat{\imath} + (1-3t)\,\hat{\jmath} + (2+t)\,\hat{k}$. Compute a_T and a_N, the tangential and normal components of the acceleration.

3. (2 points) Consider the surface defined by the equation $4x^2 - 3y^2 + 12z^2 + 12 = 0$. Describe the cross sections along the coordinates axes.