
October 2, 2025

Score _____

1. (3 points) What are the three main properties of the principal unit normal vector.
2. (1 point) Refer to one of your properties from above to explain why $\hat{N}(t)$ does not exist for a line.
3. (6 points) A projectile is fired from ground level at an angle of 12° with the horizontal. The projectile is to have a range of 200 feet. Find the required initial speed and the maximum height of the projectile. (Use $g = 32 \text{ ft/s}^2$.)