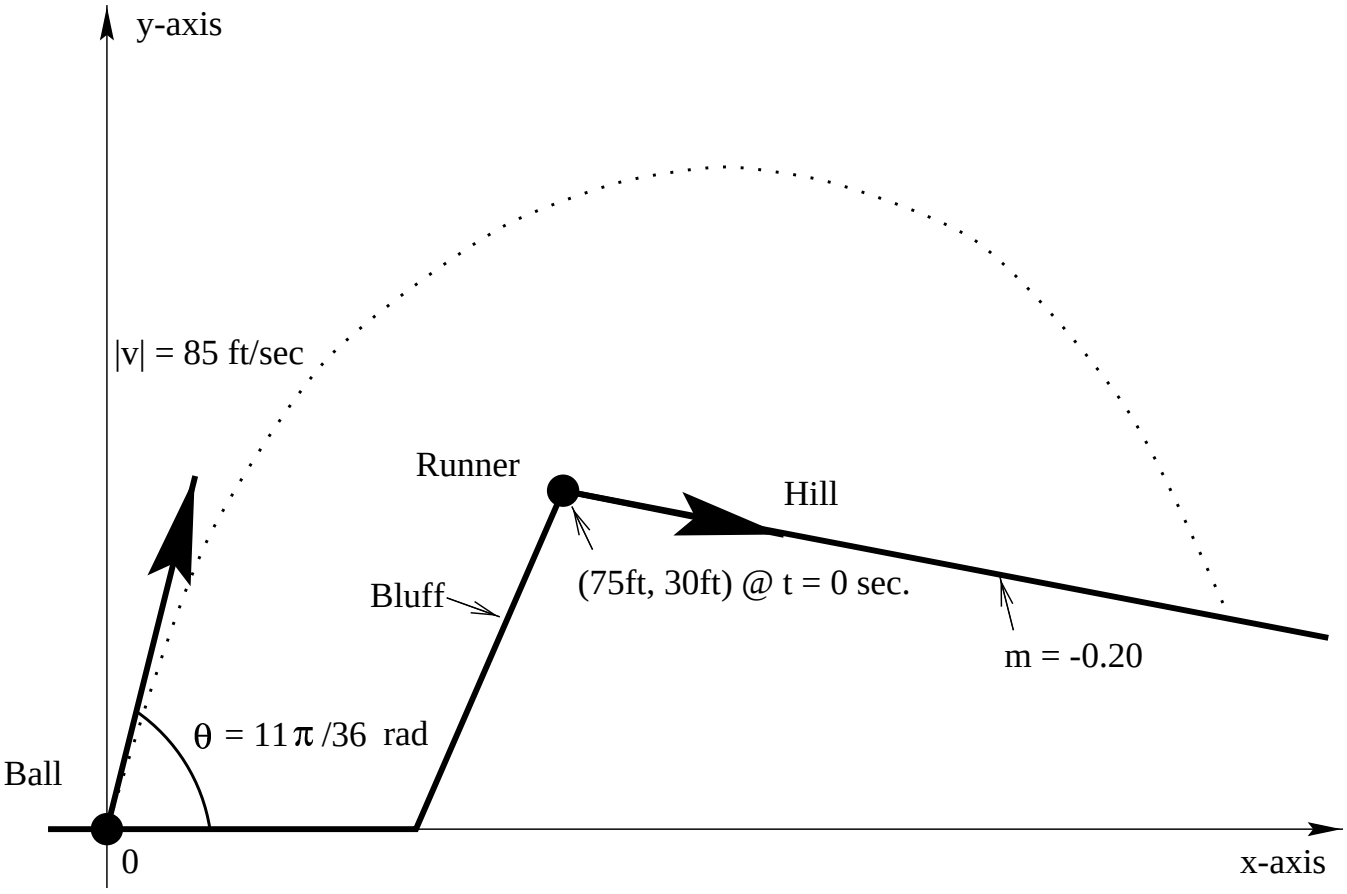
Name _____ **Student Id:** _____

Math 120, Section A **Quiz 7** **2 December 1997**

Instructions: You have 45 minutes for this quiz. Show all of your work.

Problem: Robin kicks a soccer ball from the origin up toward Vanessa who is standing on the edge of a bluff. Robin over kicks the ball. Vanessa starts running down hill with a constant speed as soon as Robin kicks the ball, and she makes a diving catch just as the ball lands on the hill. The figure below shows where the ball and Vanessa are located at $t = 0\,\text{sec}$.



Robin kicks the ball with a velocity vector such that $|v| = 85\,\frac{\text{ft}}{\text{sec}}$ and $\theta = \frac{11\pi}{36}\,\text{rad}$. Vanessa is standing at the crest of the bluff with coordinates $(75\,\text{ft}, 30\,\text{ft})$. And, at $t = 0\,\text{sec}$, Vanessa begins running down the hill. The hill has a slope of $m = -0.20$.

1. (8) What are the parametric equations for the ball?

2. (8) Where does the ball land on the hill?

3. (4) When does the ball land on the hill?

4. (10) What must Vanessa's parametric equations be in order for her to just catch the ball?