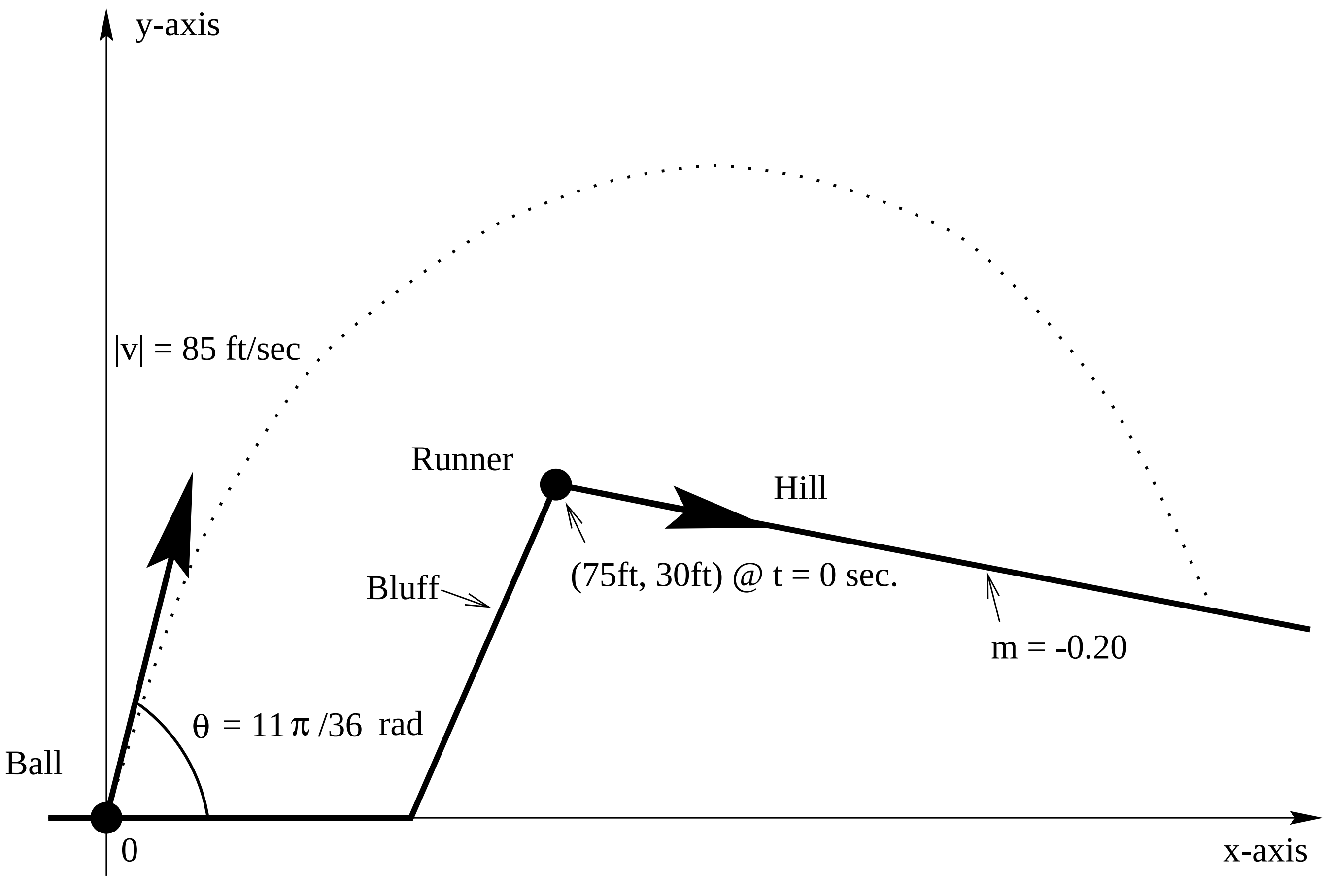
Name______________________________ **Student Id:**______________________________

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?

Name________________________ **Student Id:**________________________

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?