Problem 1: A wild monkey is running in a straight line towards your campsite at a constant speed of $v_{monkey}$. It is $x_{away}$ from your site at $t = 0$ s. You decide to stop the monkey by dropping a banana directly in front of it. You are in the trees $h_{tree}$ from the ground.

a) At what time $t$ will the monkey reach your campsite?

b) How long will it take a banana to drop straight to the ground from your tree?

c) At what time $t$ should you release the banana to intercept the monkey right when it reaches your campsite? What is the tallest $h_{tree}$ you can be in where this is still possible?

Problem 2: Achilles had promised his friend the Tortoise that they would cross the finish line of a foot race together, but the Tortoise has fallen behind. The Tortoise is $x_{lag}$ behind Achilles and is running at a speed of $v_{tortoise}$. Achilles is $x_{away}$ from the finish line and running at a speed $v_{achilles} > v_{tortoise}$.

a) Sketch a diagram of this situation, labeling all velocities and distances.

b) If Achilles continues to run at a constant speed, what constant acceleration does the Tortoise now need in order to cross the finish line at the same time?

Problem 3: You see a loaf of bread drop across your dorm window in $t_{fall}$ seconds. The dorm window is $h_{window}$ long. From what height above the top of your window was it dropped?