Problem 3 (Essay 10 points)
You may use diagrams and equations but no calculations in your response for this problem.
USE WHAT YOU'VE LEARNED FROM CLASS SO FAR TO GIVE A CONVINCING
EXPLANATION OF YOUR ANSWER.

Jay falls out of a tree and lands on a trampoline. The trampoline sags 3 feet before launching Jay
back in the air. At the very bottom, where the sag is the greatest, is Jay's acceleration upward,
downward, or zero.

When the trampoline's sag is a maximum, Jay's acceleration is upward.

*EXPLANATION: As Jay lands on the trampoline, the trampoline caused him to first slow down to a
stop. Then the trampoline causes Jay to speed up as it throws him up in air. So right before Jay
comes to a stop he is moving downward. Immediately afterward, he is moving upward. Thus the
change in velocity and therefore the change in velocity and acceleration vectors point
upward.Recall that the acceleration vector always points in the direction of the change in velocity
vector.*

$\vec{v}_{after}$

$\Delta\vec{v}$
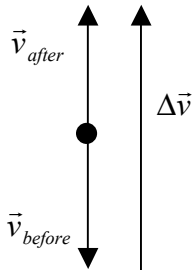
$\vec{v}_{before}$

In answering this question, it is important to consider the motion both
before and after the point where the trampoline's sag is greatest, even
though Jay's velocity is zero at that point. You need to do this to
distinguish Jay's motion from an object coming to a stop and staying
stopped. At the instant the object stops, v and a are both zero and the
object stays stopped. For example, at the point where a car comes to
a complete stop on level ground, velocity and acceleration are both
zero. The car remains at rest until something causes it to accelerate.