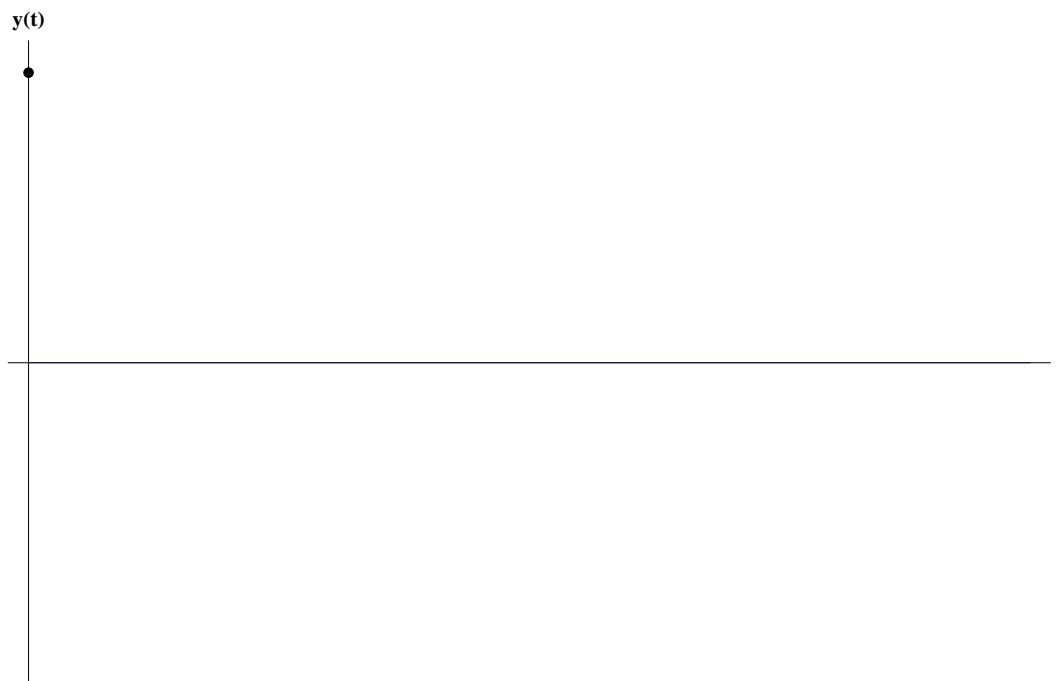*Bungee Jumping*

1. Sketch a possible bungee jump in the graph below. Here t denotes time (in seconds), while $y(t)$ denotes the vertical position of the jumper at time t. The jump starts at the "dot".

   The t-axis is chosen so that the vertical distance between the initial position (the "dot") and the t-axis is the natural length of the bungee cord (without any mass attached).

   Do this last. Think about Steps 2–4 first.

2. Where will the bungee jumper be located at the end of the jump, i.e., what can you say about $\lim_{t \to \infty} y(t)$?

3. When will the jump feel most unpleasant, i.e., when is $|y''(t)|$ maximal?

4. Sketch the graph of $y''(t)$. (You may also want to sketch $y'(t)$.)

y''(t)

t