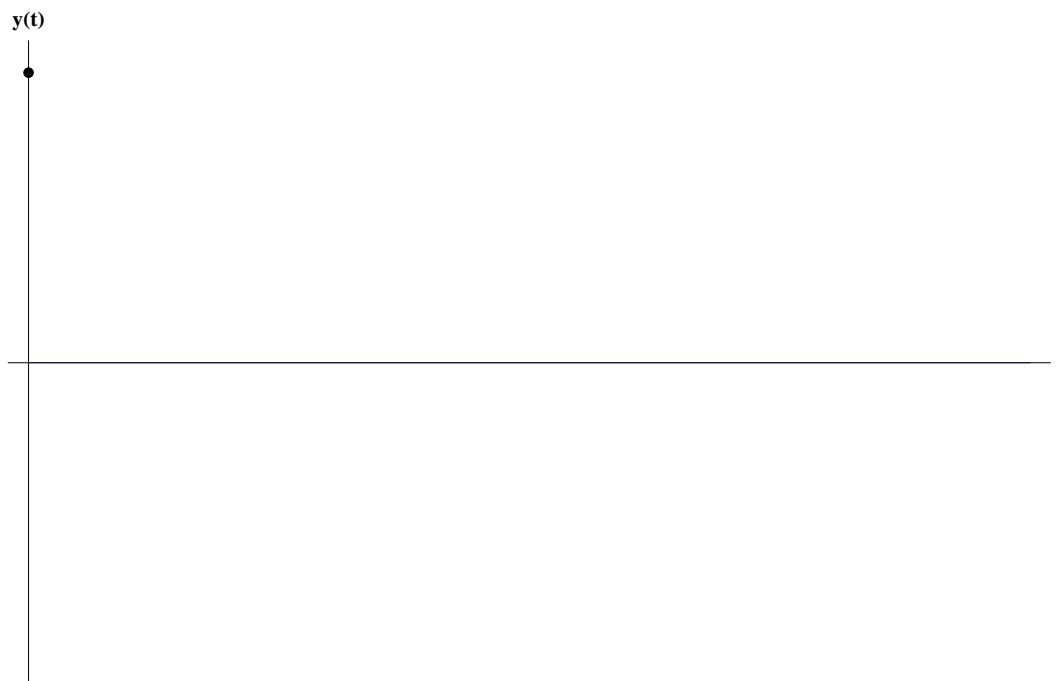


*Bungee Jumping*

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  $\lim_{t \rightarrow \infty} y(t)$ ?
3. When will the jump feel most unpleasant, i.e., when is  $|y''(t)|$  maximal?

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

