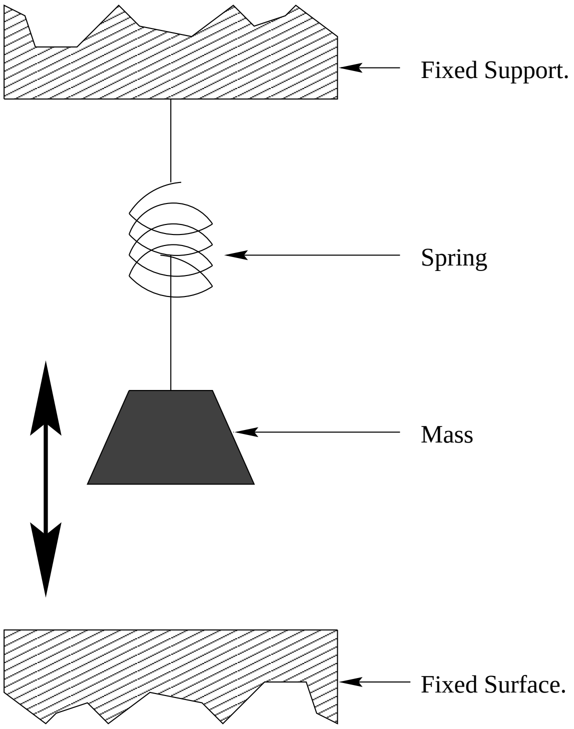
Name__________________________ **Student Id:**__________________________

Math 120, Section A **Quiz 7** **20 November 1997**

Instructions: You have 40 minutes for this quiz. Show all of your work.

Problem: Let $y = f(t)$ describe the vertical motion of a weight suspended from a spring, where y is measured in *centimeters* and t is measured in *seconds*. After some observation of this system, you find:

$$f(t) = 2\sin(\pi t - 4\pi) + 3.$$



Questions:

1. What is the amplitude, period, phase shift, and mean for $y = f(t)$?

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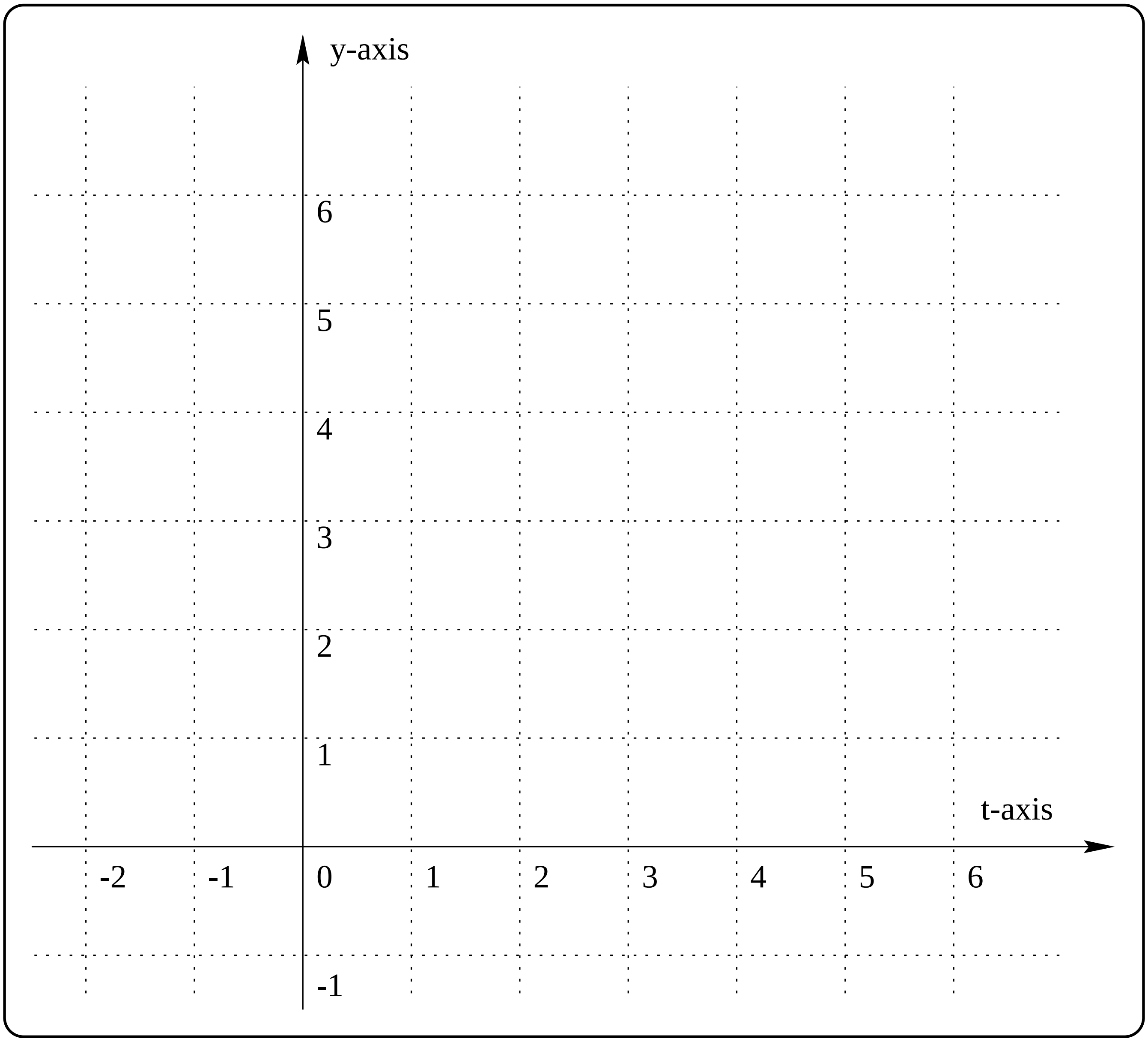
2. Sketch $y = f(t)$ in the "window" below:



3. Find the **general principal** and **general symmetric** solutions for $f(t) = 2\,\text{cm}$. Indicate on your sketch where these solutions are located for $k = -1,\ 0,\ \text{and} + 1$.

4. Within the interval $0 \leq t \leq 5\,\mathrm{sec}$, what is the total time where the mass is at or above $y = 2\,\mathrm{cm}$?