Modelling a Spring Using Newton's Method

Grace Sim

Q: Spring Example

In section 3 of the textbook, there is a sample question where we are given the equation for a spring's acceleration

$$a(t) = -Ps(t)$$

where:
$a(t)$ = acceleration of the spring at a given time
P = a constant
$s(t)$ = position of the spring at a given time

Using this equation, we want to be able to model the spring's position at any given time (i.e., model $s(t)$)

A: Spring Example

Here's what we know:

1. The derivative of *position* is *velocity*

$$v(t) = \frac{ds}{dt}$$

2. The derivative of *velocity* is *acceleration*

$$a(t) = \frac{dv}{dt}$$