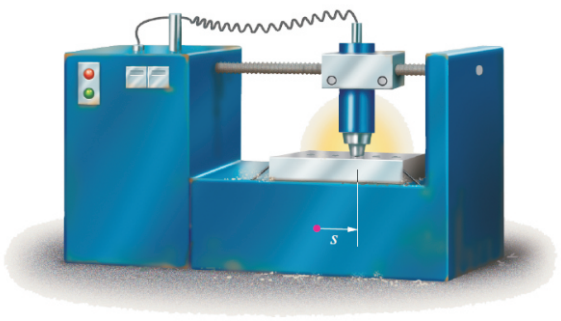
Name

Date

Problem: 001

Given:

The milling machine is programmed so that during the interval of time from $t = 0$ to $t = 2$ s, the position of its head (in inches) is given as a function of time by $s = 4t - 2t^3$. What are the velocity (in in/s) and acceleration (in in/s^2) of the head at $t = 1$ s?



Required:

Solution:

Solution: The motion is governed by the equations

$s = (4 \text{ in/s})t - (2 \text{ in/s}^2)t^2$,

$v = (4 \text{ in/s}) - 2(2 \text{ in/s}^2)t$,

$a = -2(2 \text{ in/s}^2)$.

At $t = 1$ s, we have $\boxed{v = 0, a = -4 \text{ in/s}^2.}$