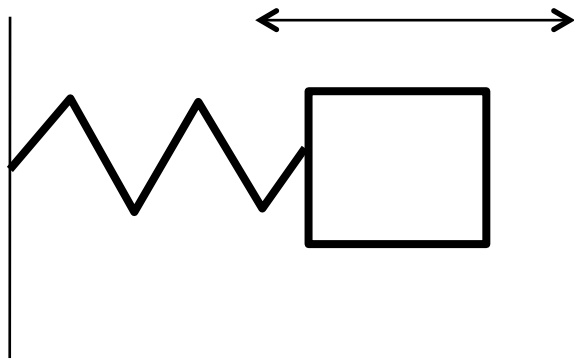A mass m oscillates at the end of a spring (constant k)
It moves between x=.1 m to x=.5 m.
The block is at x=0.3 m at t=0 s, moves out to x=0.5 m and
returns to x=0.3 m at t=2 s.

Write the motion in the form $x(t)=x_0+A\cos(\omega t+\phi)$, and
find numerical values for x_0, A, ω, and ϕ

If time:
Write the motion in the form $x(t)=x'_0+A'\sin(\omega' t+\phi')$, and
find numerical values for x'_0, A', ω', and ϕ'