PHYS 232 Jan. 10, 2024

Modern Physics Laboratory

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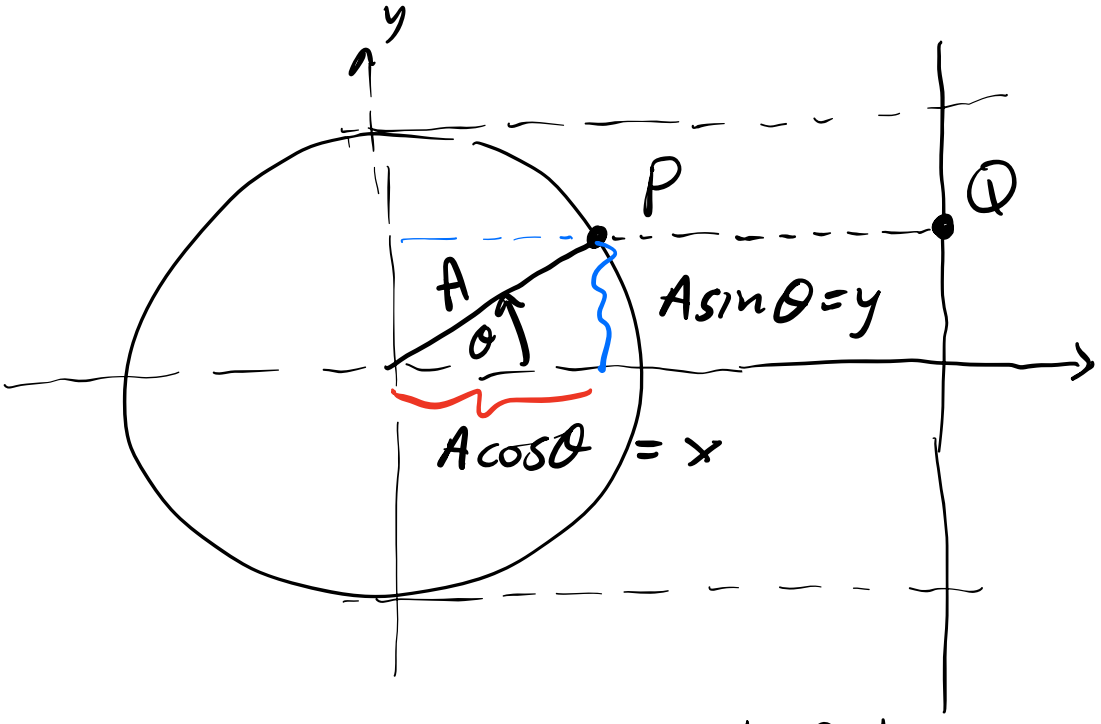
SCI 266

Course website:
https://cmps-people.ok.ubc.ca/jbobowsk/phys232.html

To do: Sign up for Experiment # 1 before 11:00 am on Friday, Jan. 12. Go to PHYS 232 Canvas page to find a link to the online sign-up sheet.

Simple Harmonic Motion Review.



$\theta = \omega t + \phi$ ← angle @ $t = 0$.

for uniform circular motion.

$\therefore x = A\cos(\omega t + \phi)$

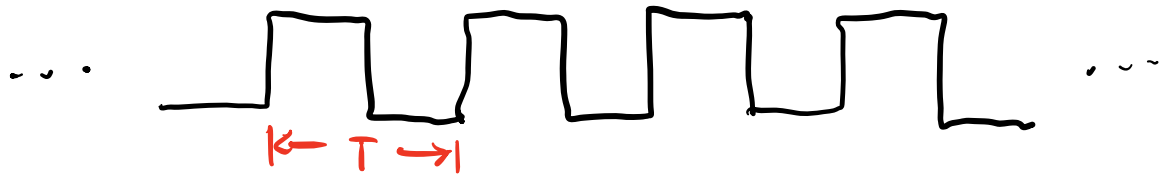
$y = A\sin(\omega t + \phi)$

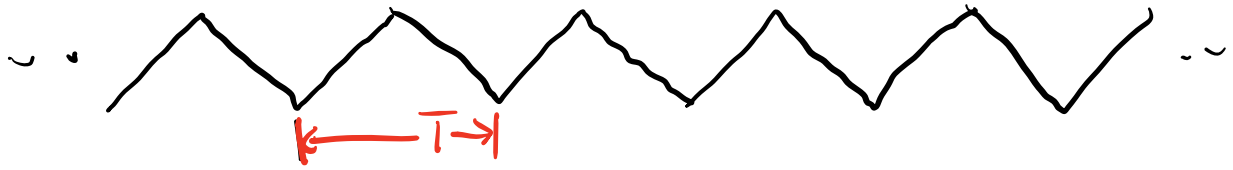
} motion of pt. P

gives position of Q (shadow of P)

Simple Harmonic motion is describe by back & forth (sinusoidal) motion of a pt.

Goal: Express a periodic fcn:





as a series of pure sine & cosine fcns.

That is, we will attempt to express a periodic fcn $f(x)$ is the form:

$$f(x) = \frac{a_0}{2} + a_1 \cos x + a_2 \cos 2x + a_3 \cos 3x + \dots$$
$$+ b_1 \sin x + b_2 \sin 2x + b_3 \sin 3x + \dots$$

Need a perscription for finding the values

of the a_n & b_n coefficients.