Review

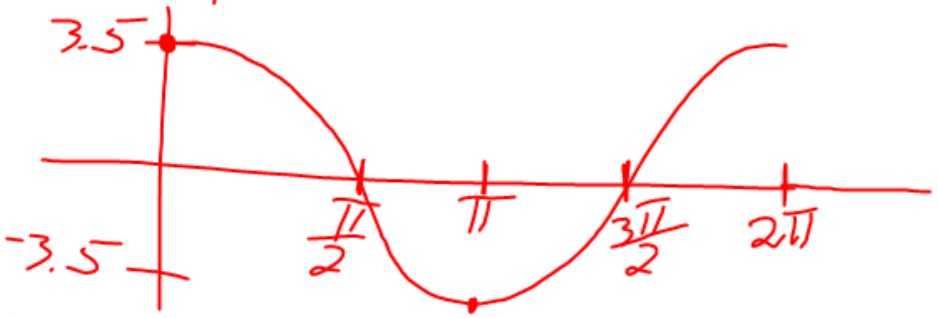
$y = A\sin K\theta \qquad y = A\cos K\theta$

Amplitude $= |A|$

Period $= \dfrac{2\pi}{K}$

① $y = 3.5\cos\theta$

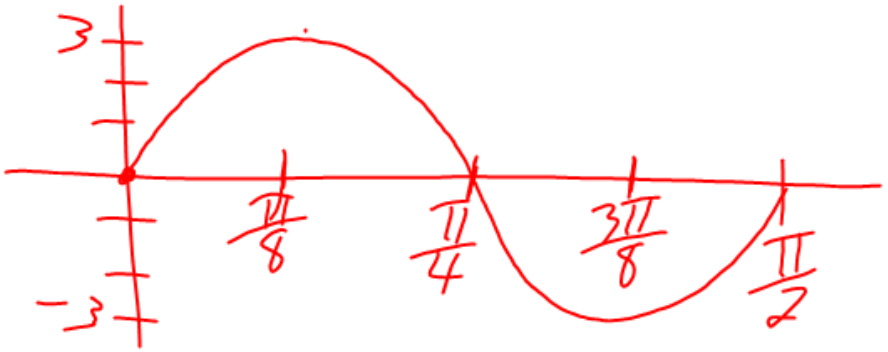
Ampl $= 3.5$ Period $= 2\pi$



② $y = 3\sin 4\theta$

Ampl $= 3$

Period $= \dfrac{2\pi}{4} = \dfrac{\pi}{2}$



4 Write an equation of the cosine function with amplitude 9.8 and period 6π.

$y = A\cos K\theta$

$y = \pm 9.8 \cos \frac{1}{3}\theta$

OR

$y = \pm 9.8 \cos \frac{\theta}{3}$

$\text{Period} = \frac{2\pi}{K}$

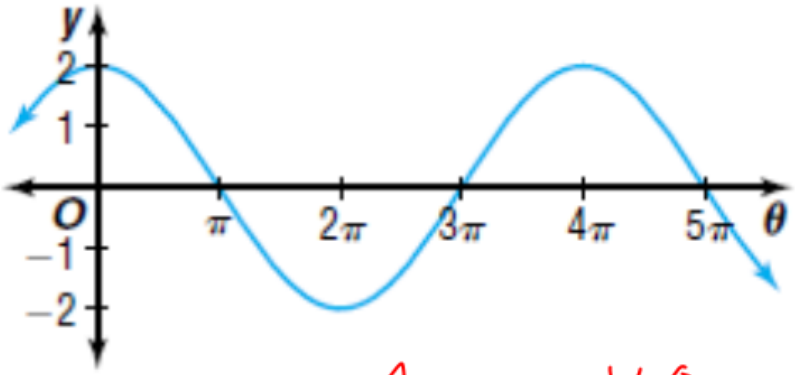
$6\pi = \frac{2\pi}{K}$

$6\pi K = 2\pi$

$K = \frac{2\pi}{6\pi}$

$K = \frac{1}{3}$

49.



$\text{Ampl} = 2$

$\text{Per} = 4\pi$

$4\pi = \frac{2\pi}{K}$

$K = \frac{2\pi}{4\pi}$

$K = \frac{1}{2}$

$y = A\cos K\theta$

$y = 2\cos \frac{\theta}{2}$

ex.5 high → low ⇒ 3.5 ft

high → low → high ⇒ 14 sec

equilibrium at $t=0$, on its way down

Sine

A is neg.

$\text{Ampl} = \frac{3.5}{2} = 1.75$

Period = 14 sec

$14 = \frac{2\pi}{k}$

$k = \frac{2\pi}{14}$

$k = \frac{\pi}{7}$

a. $\boxed{y = -1.75 \sin \frac{\pi}{7} t}$

b. at $t = 8$ sec

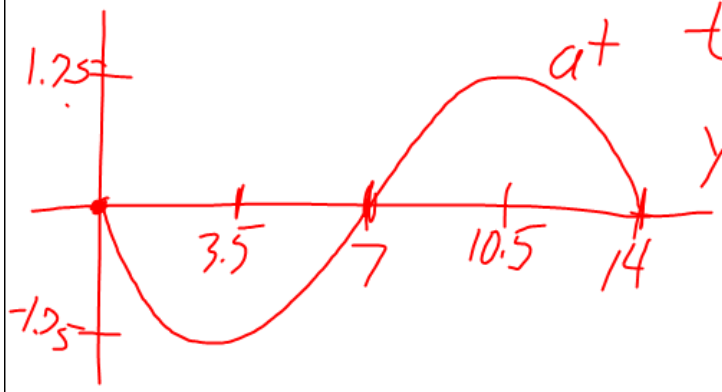
$y = -1.75 \sin\left(\frac{\pi}{7}(8)\right) = -1.75 \sin\left(\frac{8\pi}{7}\right)$

$y \approx .8$ ft

at $t = 17$ sec

$y = -1.75 \sin\left(\frac{17\pi}{7}\right)$

$y \approx -1.7$ ft



MUSIC Write an equation of the sine function that represents the initial behavior of the vibrations of the note G above middle C having amplitude 0.015 and a frequency of 392 hertz.

$y = A \sin Kt$

$\boxed{y = \pm .015 \sin 784\pi t}$

Freq = 392

Period = $\frac{1}{392}$

$\frac{1}{392} = \frac{2\pi}{K}$

$\frac{1}{392} K = 2\pi$

$K = 2\pi(392)$

$K = 784\pi$

p. 373-377
17-18, 21-22, 24-25, 27, 33-34, 36-37, 41-43, 47, 49-54, 56-57, 59, 73