

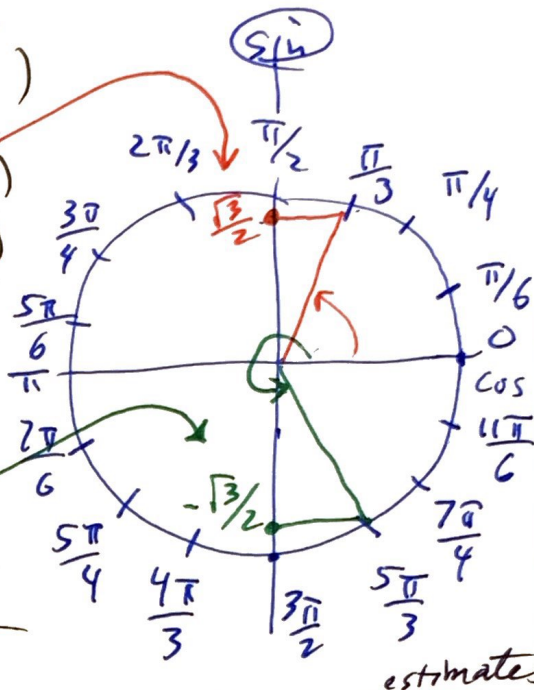
CHAPTER 6 Graphs of Trig Functions

1

6.1 Graphing Sine & Cosine • graph $f(x) = \sin(x)$

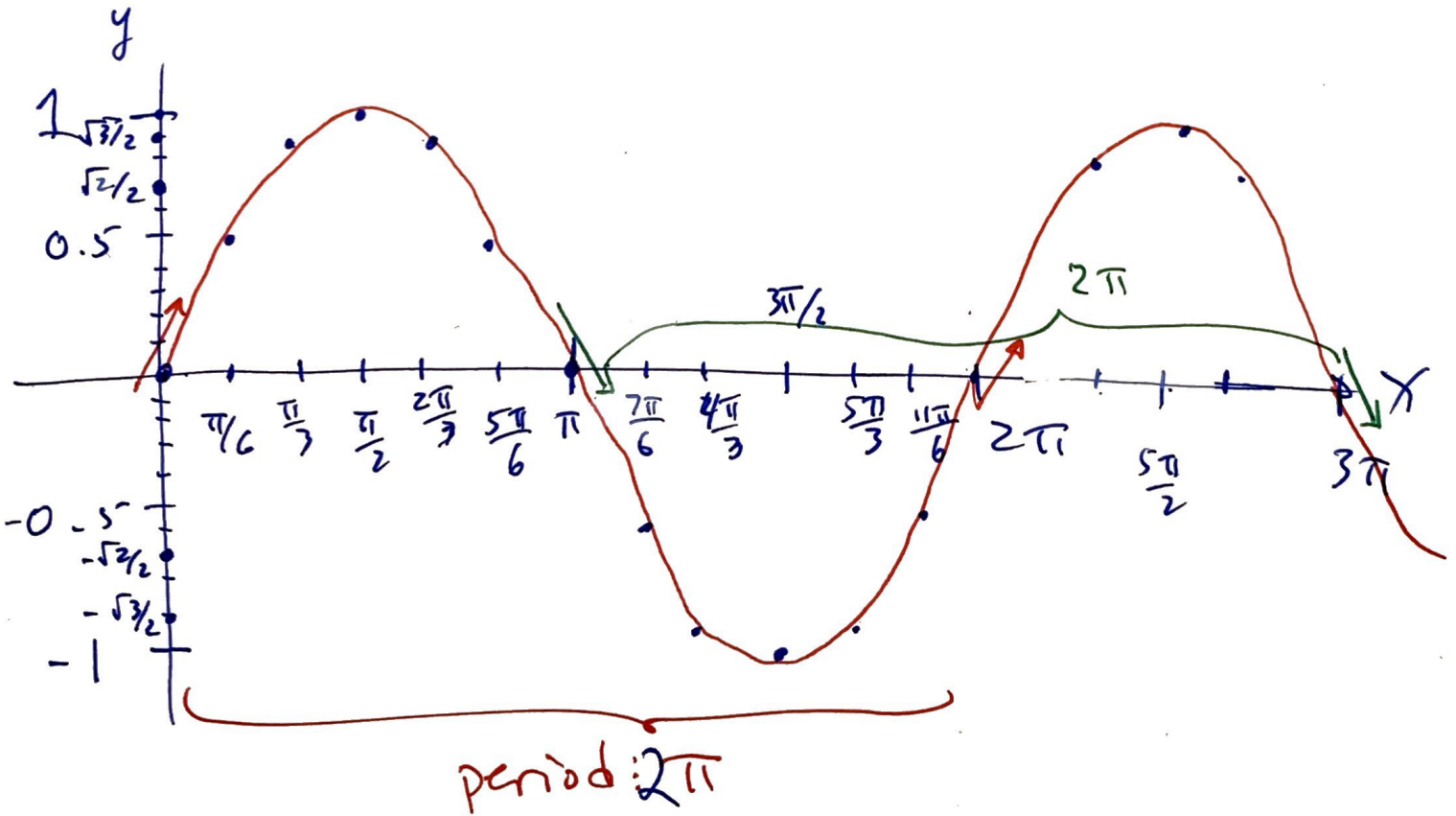
• Table

X	$y = \sin(x)$	(x, y)
0	$\sin(0) = 0$	(0, 0)
$\pi/3$	$\sin(\pi/3) = \sqrt{3}/2$	($\pi/3, \sqrt{3}/2$)
$\pi/2$	$\sin(\pi/2) = 1$	($\pi/2, 1$)
$2\pi/3$	$\sin(2\pi/3) = \sqrt{3}/2$	($2\pi/3, \sqrt{3}/2$)
$\frac{3\pi}{3} = \pi$	$\sin(\pi) = 0$	($\pi, 0$)
$4\pi/3$	$\sin(4\pi/3) = -\sqrt{3}/2$	($4\pi/3, -\sqrt{3}/2$)
$3\pi/2$	$\sin(3\pi/2) = -1$	($3\pi/2, -1$)
$5\pi/3$	$\sin(5\pi/3) = -\sqrt{3}/2$	($5\pi/3, -\sqrt{3}/2$)
2π	$\sin(2\pi) = 0$	($2\pi, 0$)



estimate
 $\sqrt{2}/2 = 0.707$
 $\sqrt{3}/2 = 0.87$

• plot

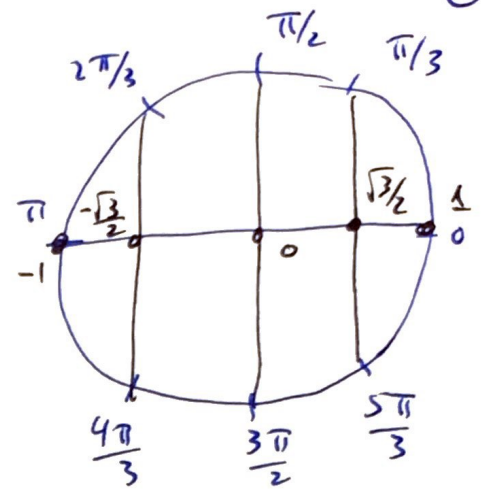


(6.1 cont)

• graph of $f(x) = \cos(x)$

• Table

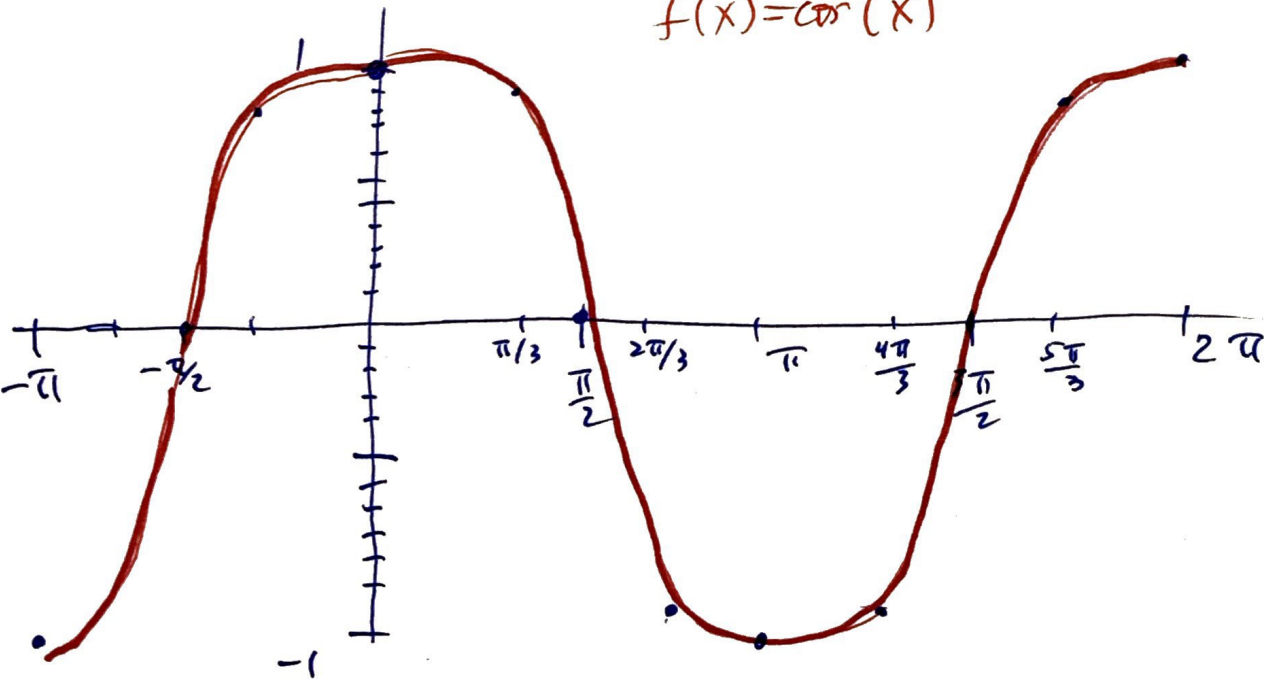
x	$y = \cos(x)$	(x, y)
0	$\cos(0) = 1$	$(0, 1)$
$\frac{\pi}{3}$	$\cos(\frac{\pi}{3}) = \frac{\sqrt{3}}{2}$	$(\frac{\pi}{3}, \frac{\sqrt{3}}{2})$
$\frac{\pi}{2}$	$\cos(\frac{\pi}{2}) = 0$	$(\frac{\pi}{2}, 0)$
$\frac{2\pi}{3}$	$\cos(\frac{2\pi}{3}) = -\frac{\sqrt{3}}{2}$	$(\frac{2\pi}{3}, -\frac{\sqrt{3}}{2})$
π	$\cos(\pi) = -1$	$(\pi, -1)$
$\frac{4\pi}{3}$	$\cos(\frac{4\pi}{3}) = -\frac{\sqrt{3}}{2}$	$(\frac{4\pi}{3}, -\frac{\sqrt{3}}{2})$
$\frac{3\pi}{2}$	$\cos(\frac{3\pi}{2}) = 0$	$(\frac{3\pi}{2}, 0)$
$\frac{5\pi}{3}$	$\cos(\frac{5\pi}{3}) = \frac{\sqrt{3}}{2}$	$(\frac{5\pi}{3}, \frac{\sqrt{3}}{2})$
2π	$\cos(2\pi) = 1$	$(2\pi, 1)$



$$\frac{\sqrt{3}}{2} \approx 0.87$$

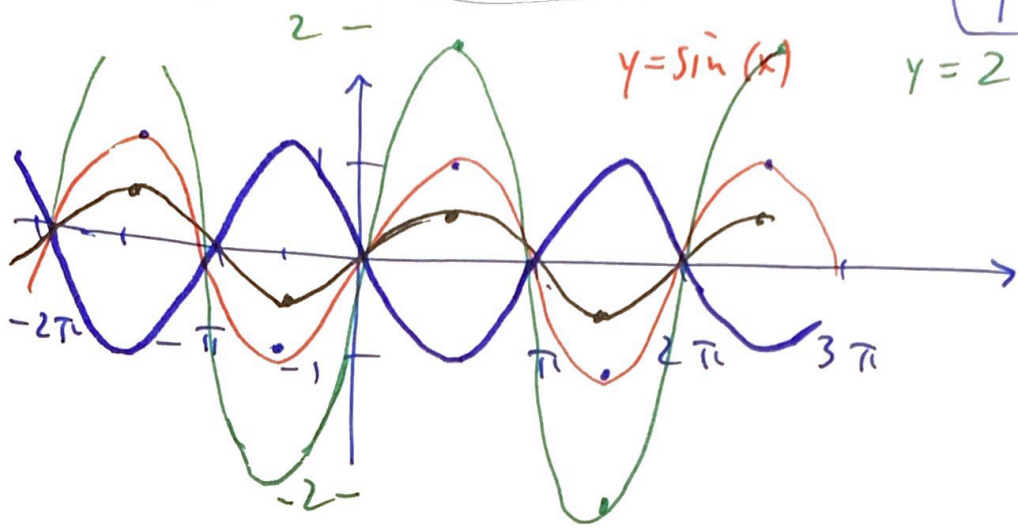
• plot

$$f(x) = \cos(x)$$



* Amplitude Changes for Sine

$Y = A \sin(X)$



$y = 2 \sin(x)$

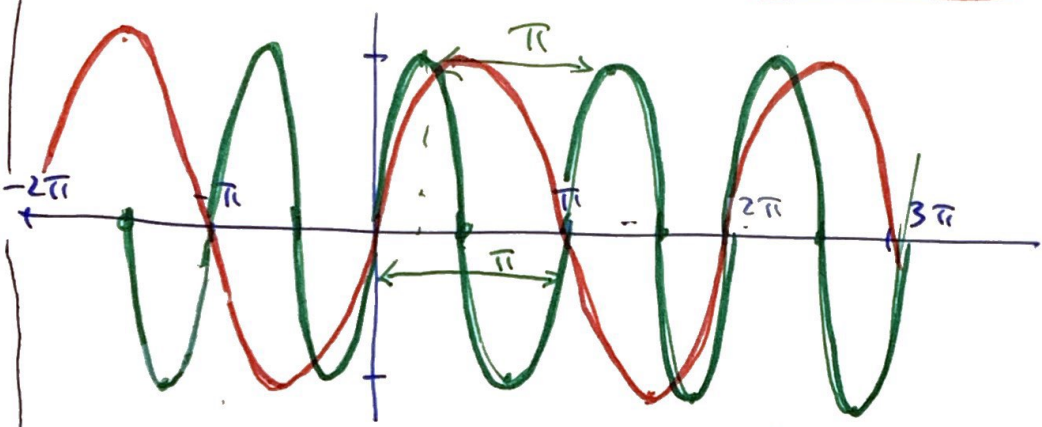
$y = \frac{1}{2} \sin(x)$

$y = -\sin(x)$

Period changes for sin

$y = \sin(x)$

$y = \sin(2x)$



ex!

$\sin(2\pi) = 0$

$\sin(2 \cdot \frac{\pi}{4}) = 1$

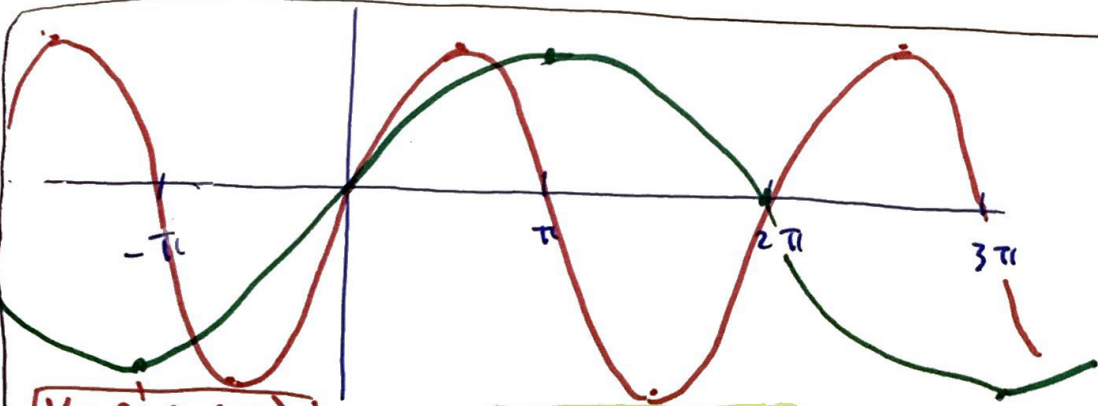
$\sin(2 \cdot \frac{\pi}{2}) = 0$

$B > 1$ squeezed

skewed

$y = \sin(Bx)$

Period = $\frac{2\pi}{B}$



$B < 1$

stretched

ex

$y = \sin(\frac{x}{2})$

$y = \sin(x)$

stretched

$y = A \cos(Bx)$ *period changes for cosine

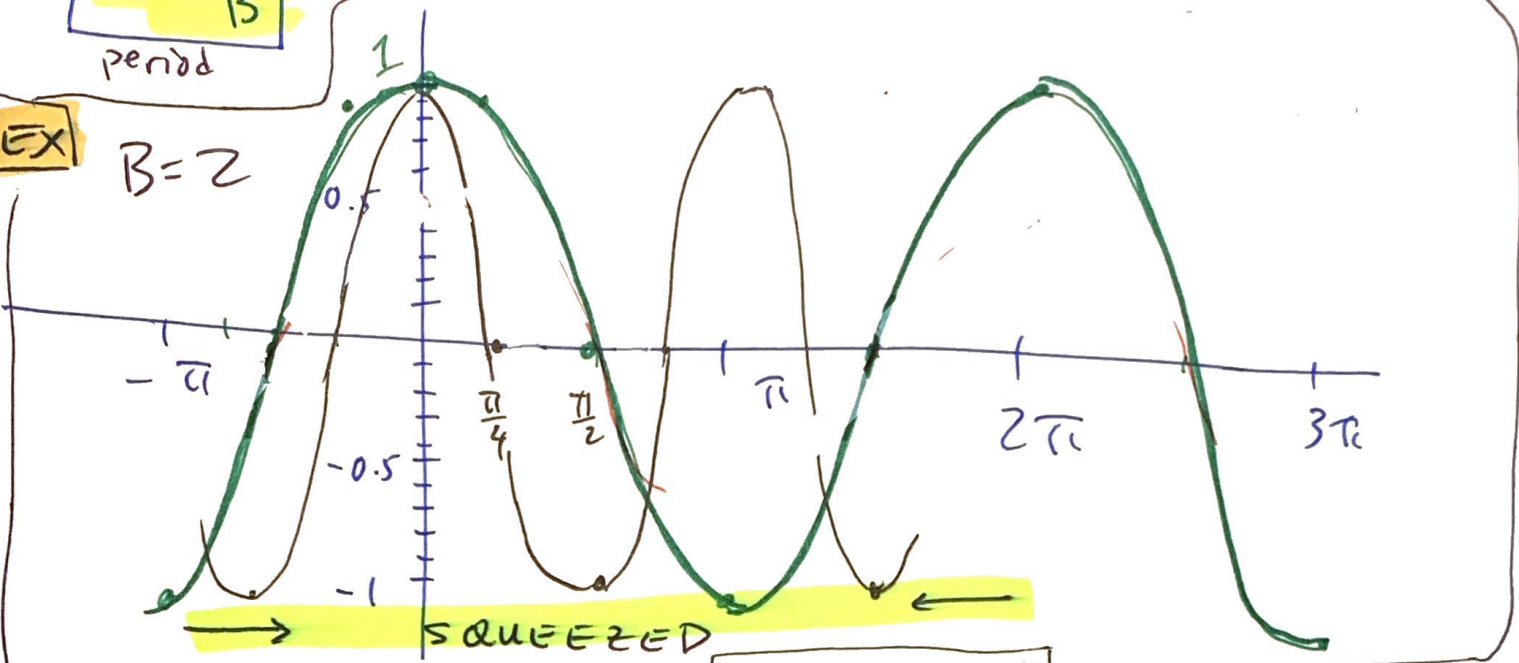
(4)

$P = \frac{2\pi}{B}$

period

$y = \cos(x)$

EX $B=2$



$y = \cos(2x)$

EX $B > 1$
squeezed

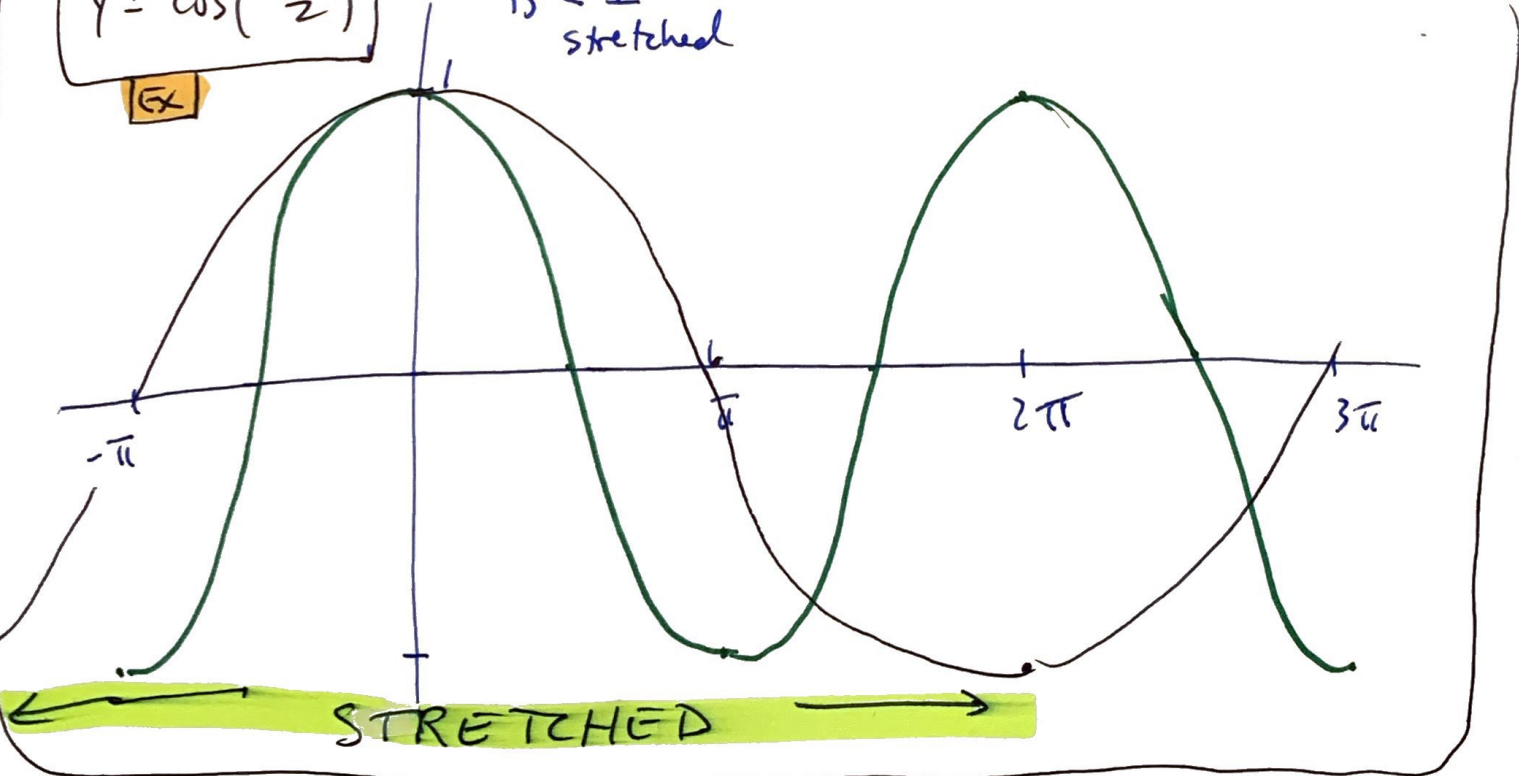
Period = $\frac{2\pi}{B}$

EX $B = 1/2$

$y = \cos\left(\frac{x}{2}\right)$

$B < 1$
stretched

EX



* we will revisit the sine and cosine (5)
functions again in 6.1 & 6.2 part II
where we will graph all trig functions
with phase-shifts. (Horizontal shifts)