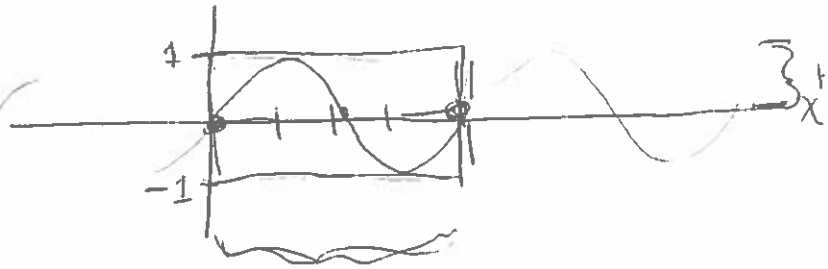
Graphing Trig Functions

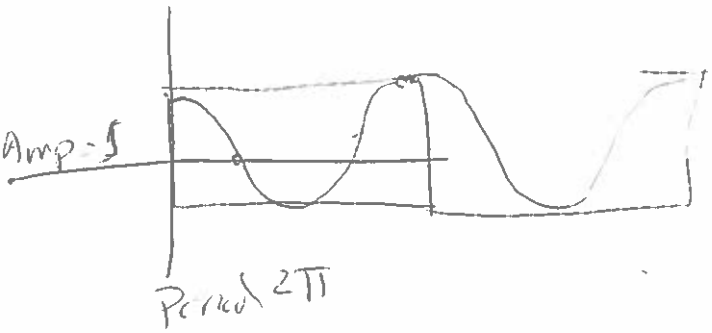
$y = \sin x$



1 period
(width of 1 lobe)
$2\pi \approx 6.28$
$(360°)$

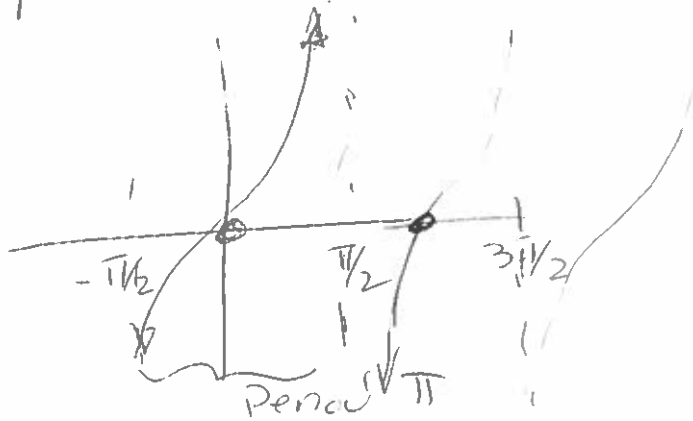
Domain: $\mathbb{R}$ $(-\infty, \infty)$
Range: $[-1, 1]$
Zeros: $0, \pi, 2\pi, \cdots n\pi$
n is integer

$y = \cos(x)$



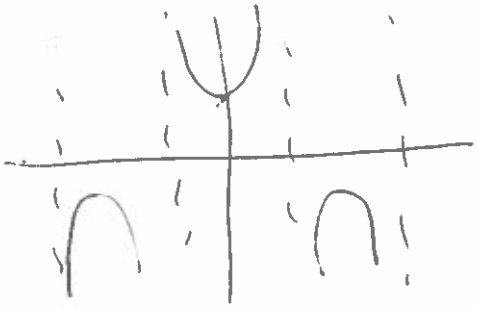
Domain: $\mathbb{R}$
Range: $[-1, 1]$
Zeros $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2}$
or $(2n+1)\frac{\pi}{2}$
n is an integer

$y = \tan(x)$

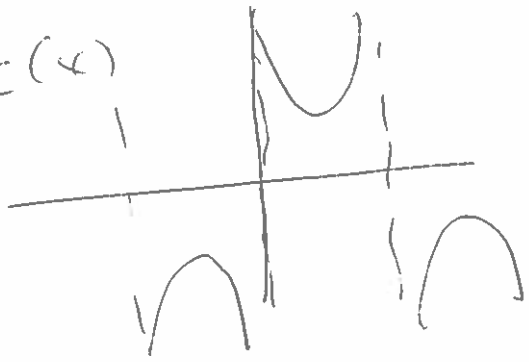


Domain: $x \neq (2n+1)\frac{\pi}{2}$
Range: $(-\infty, \infty)$ $\mathbb{R}$
Zeros $0, \pi, 2\pi, \cdots n\pi$

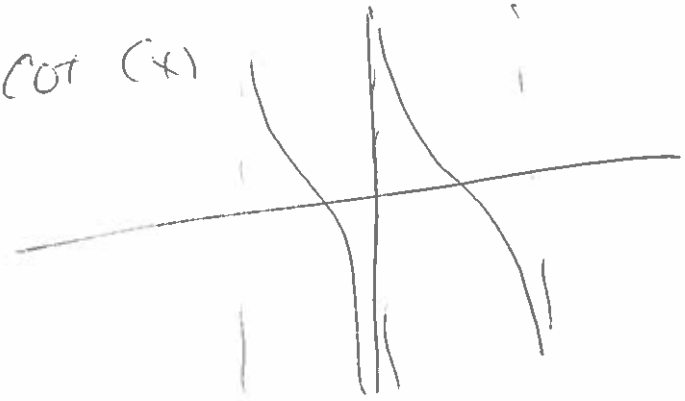
$$\sec(x) = \frac{1}{\cos(x)}$$



$\csc(x)$



$\cot(x)$

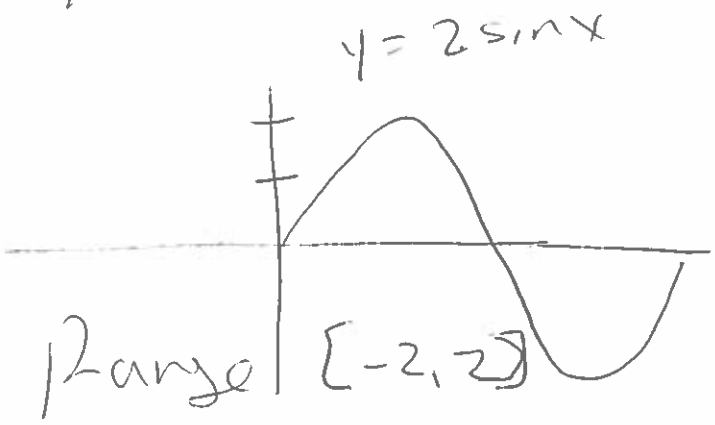


Transformations

$y = A\sin(x)$

$A > 1$ Stretchi
$0 < A < 1$ Shrinka
$A < 0$ Reflecti

Amplitude $= |A|$



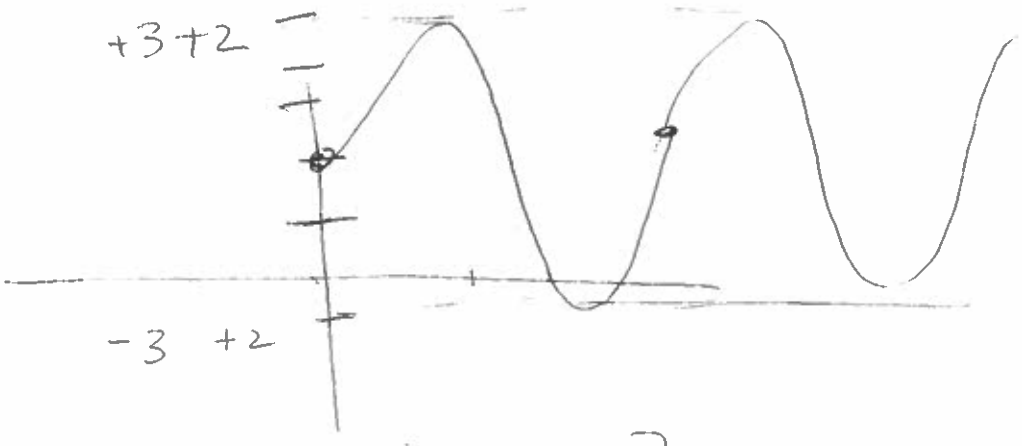
Range $[-2, 2]$

$y = \sin(x) + D$

$D > 0$ Raise
$D < 0$ Lowe

Range: $[D-A, D+A]$

Ex $y = 3\sin(x) + 2$

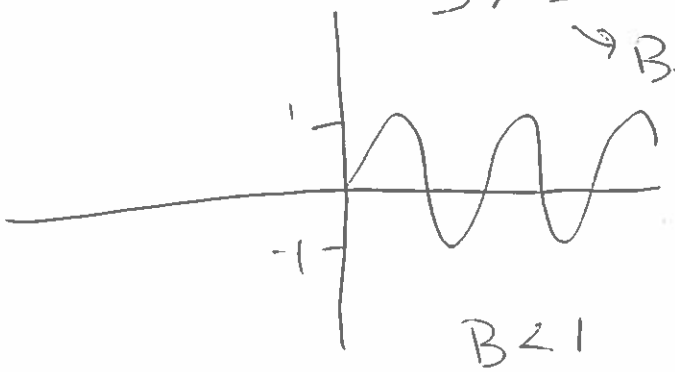


Range $[-1, 5]$

INSIDE TRANSFORMATIONS

$y = \sin(Bx)$ Period $\frac{2\pi}{|B|}$

$B > 1$ → Busy Pushed



$B < 1$ Lazy Puller

B is Negative → reflect about y-axis

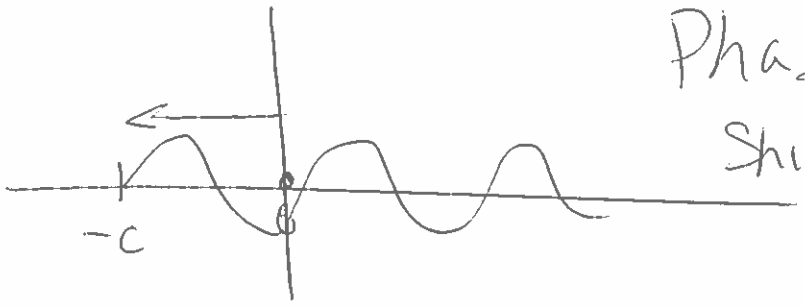
$y = (x)^2$

$= (2x)^2$

Ex $y = \sin(x + c)$ Left by "c"

≥ 0 $x + c = 0$

Start at $x = -c$



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

Phase Shift $= -\pi/2$

Ex $y = \sin(Bx + c)$

≥ 0

$Bx + c = 0$

$x = -c/B$

London Eye

0	10
15	110
30	210
45	110
60	10

$\frac{210+10}{2}$

$y = A\sin(Bx+C)+D$

Amplitude = $A = 100$

Period = $\frac{2\pi}{B} = 60$ mins

Raised = $D = 110$

$B = \frac{2\pi}{60} =$

Phase Shift

$-\pi/2$

$y =$ $a = 100$

$b = .104\ldots$

$c = -1.57$

$d = 110$

Amp = A

Period = $2\pi/B$

PS = $-C/B$

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter: Stu. Kroboth
Date:	Writer/Prep: Scott Sliker
Topics:	QC/Leader: Danyan Zhou, Mengyi Guo

Instructions: Val Sinclair

time	$
8	300
9	2000
10	2300
11	4500
12	5670
13	5170
14	450
15	1250
16	2300
17	2000

SINREG

$y = a \cdot \sin(bx + c) + d$

$a = 2791.07$

$b = .88716$

$c = -2.54$

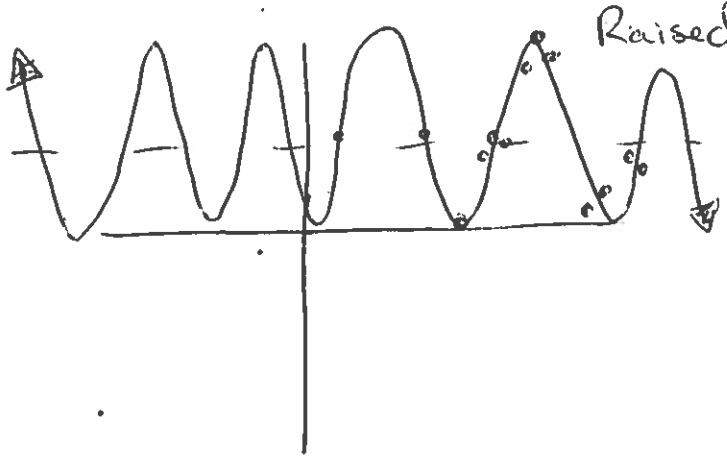
$d = 2998.43$

amplitude = 2791.07

Period = $\frac{2\pi}{B}$ = 7.08

Phase Shift = $\left|\frac{-c}{B}\right|$ = +2.86

Raised = D = 2998.43



2998.43

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter:
Date:	Writer/Prep:
Topics:	QC/Leader:

Instructions:

10
20 150
30 64
40 127
50 71
60 110

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter: Shawn Tsoi
Date: 10/30/13	Writer/Prep: Avik Khoreja
Topics: Sin Reg	QC/Leader: Oww Turkan

Instructions:

L1	L2
0	200
5	400
10	600
15	400
20	200

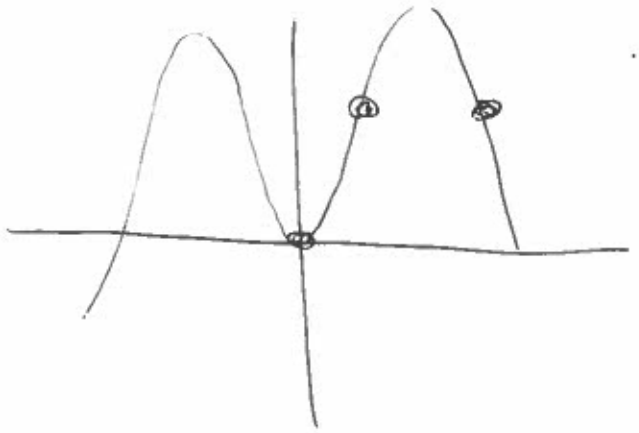
Sin Reg

a = 200

b = .314

C = -1.57

d = 400



P = 20.01

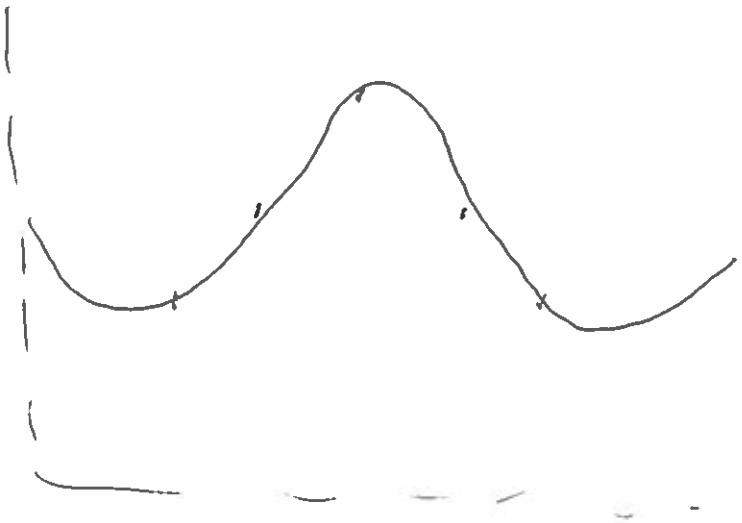
PS = 5

A = 200

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter: Trey Murrill
Date:	Writer/Prep: Dominique GASTO
Topics:	QC/Leader: Tatyana Cald

Instructions:

YR.	#
12	9
11	20
10	36
9	20
8	6



$a = 14.45$

$b = -1.69$

$c = -.45$

$d = 21.59$

Amplitude: 14.45

Period $= \frac{2\pi}{-1.69} = -3.72$

raised = D: 21.59

Phase Shift $= \frac{-.45}{-1.69} = .266$

GROUP NAME:	**Student Names (First and Last)**
Logo:	**Speaker/Presenter:**
Date:	**Writer/Prep:**
Topics: Sin Regression	**QC/Leader:**

Instructions:

10 1
20 1.5
30 2
40 1.5
50 1

$y = a\sin(bx+c)+d$

$y = 1.78\sin(0.0[illegible]x+[illegible])+0.[illegible]2$

GROUP NAME: Parsing **Logo:**	**Student Names (First and Last)** **Speaker/Presenter:** [illegible] **Writer/Prep:** Brandon [illegible] **QC/Leader:** Sinking
Date: **Topics:**	

Instructions:

Data

Time | height of Str Leg

0	5
10	20
20	35
30	20
40	5

Phase shift →

$y = a * \sin(bx + c) + d$

$a = 15$

$b = .157$

$c = -1.57$

$d = 20$

amplitude = 15

period: $\frac{2\pi}{B}$ $\frac{2\pi}{.157}$ period = 40 units

phase shift: $-c/b = -1.57/.57 = 10$