

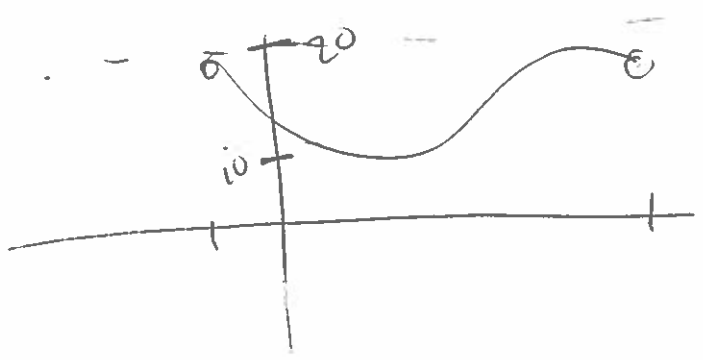
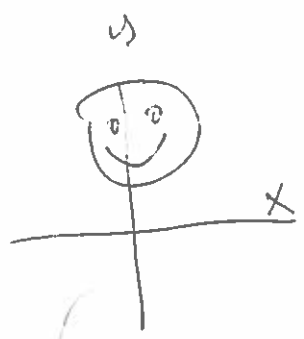
Functions

$$f(x) = 2x$$

Domain: \mathbb{R}
Range: \mathbb{R}

Domain: $\sqrt{\text{No Neg}}$ or $\frac{1}{\text{No zero}}$

Range: From Graph



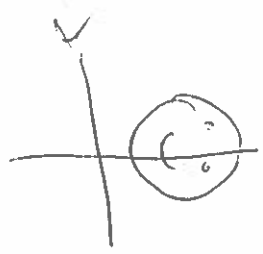
x	y
1	2
2	4
3	6

Jobs can be undone ∇

Inverse Function

$$f^{-1}(x) = \frac{1}{2}x$$

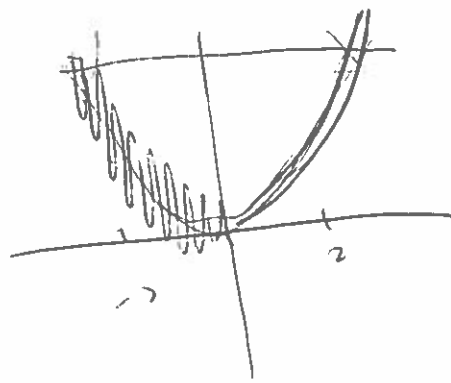
Switches the domain & Range



x	y
2	1
4	2
6	3

$$g(x) = x^2$$

$$x \geq 0$$



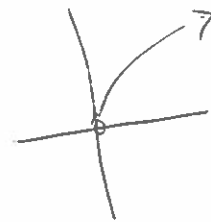
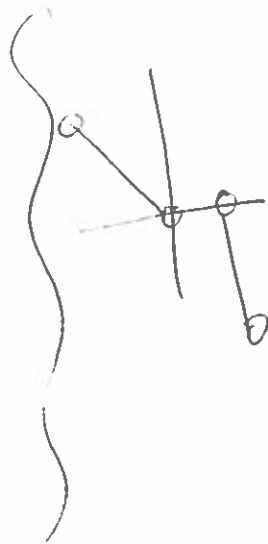
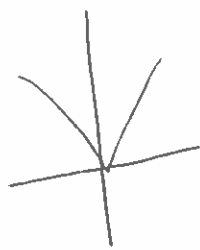
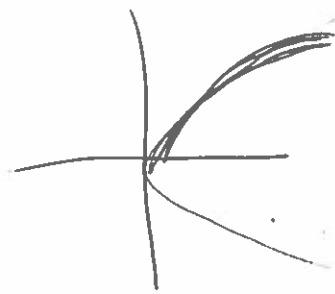
Horizontal
Line
Test

(VLT
used

to find
if an

inverse
exists

$$g^{-1}(x) = +\sqrt{x}$$

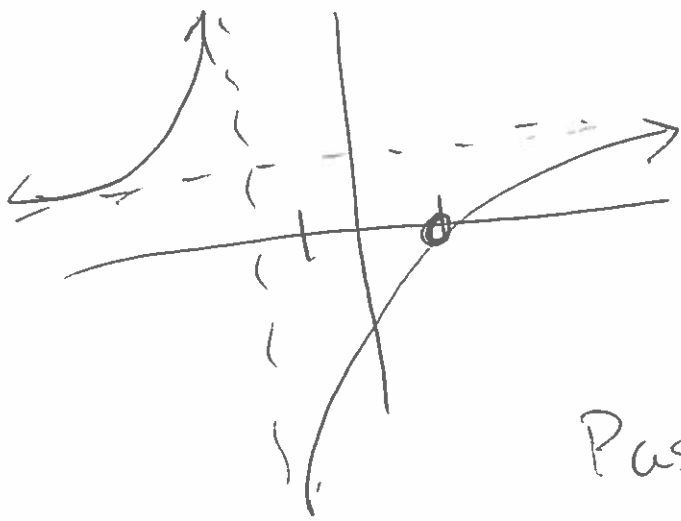


NO

YES

Procedure for Finding Inverse.

- ① Solve for x . (by hand)
- ② Switch x & y
change y to y^{-1}



$$y = \frac{x-1}{x+2} \quad D: x \neq -2$$

R: ?
Graph

Passes HLT
Has an inverse
HLA: $y = 1$

To Find inverse (1) solve for X

$$y = \frac{x-1}{x+2}$$

Domain
&

Range
Switch

$$(x+2)y = x-1$$

$$xy + 2y = x - 1$$

$$xy - x = -1 - 2y$$

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

$$x = \frac{-1-2y}{y-1}$$

$$(2) \quad y^{-1} = \frac{-1-2x}{x-1}$$

$$D: x \neq 1$$

$\frac{f}{D: x \neq -2}$	$\frac{f^{-1}}{D: x \neq 1}$
$R: y \neq 1$	$R: y \neq -2$

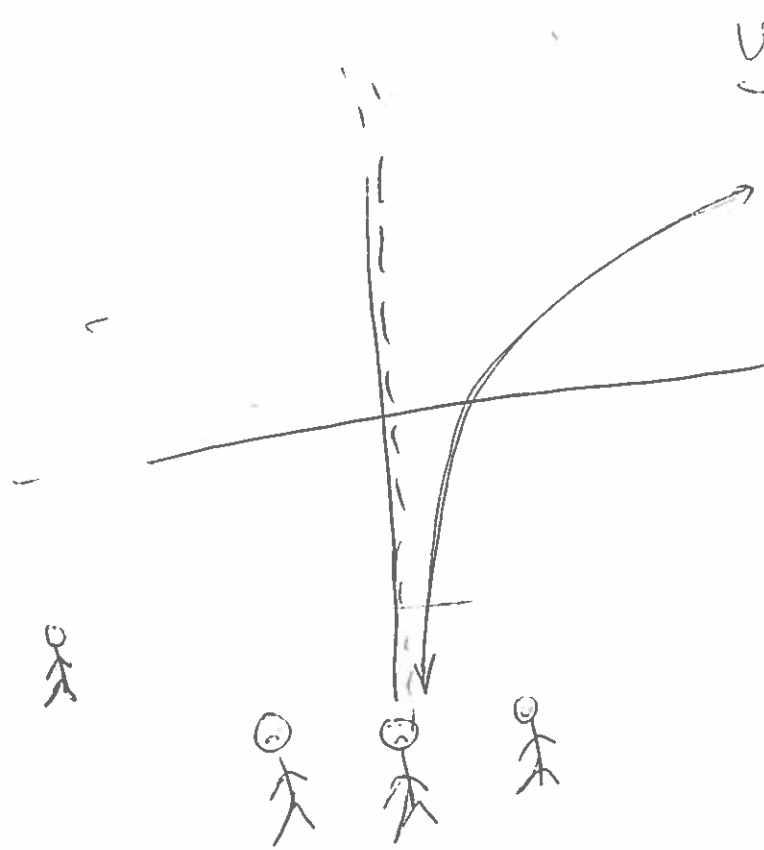
Composite Function

$$(f \circ g)(x) = f(g(x))$$

"Assembly Lines"

$$(f \circ f^{-1})(x) = x$$

$$(f^{-1} \circ f)(x) = x$$



$$y = \log_B x$$

$$VA: x=0$$

$$D: (0, \infty)$$

$$R: (-\infty, \infty)$$

Common

$$\log \equiv \log_{10}$$

Ex

$$\log_{10} 100 = x$$

$$\log(100)$$

use definition

$$10^x = 100$$

$$x=2$$

Natural Log

$$y = e^x \xrightarrow{\text{PI}} x = \log_e y$$
$$x = \ln(y)$$

Property

$$f(x) = e^x$$

$$f^{-1}(x) = \ln x$$

$$(f \circ f^{-1})(x) = x = e^{\ln x}$$

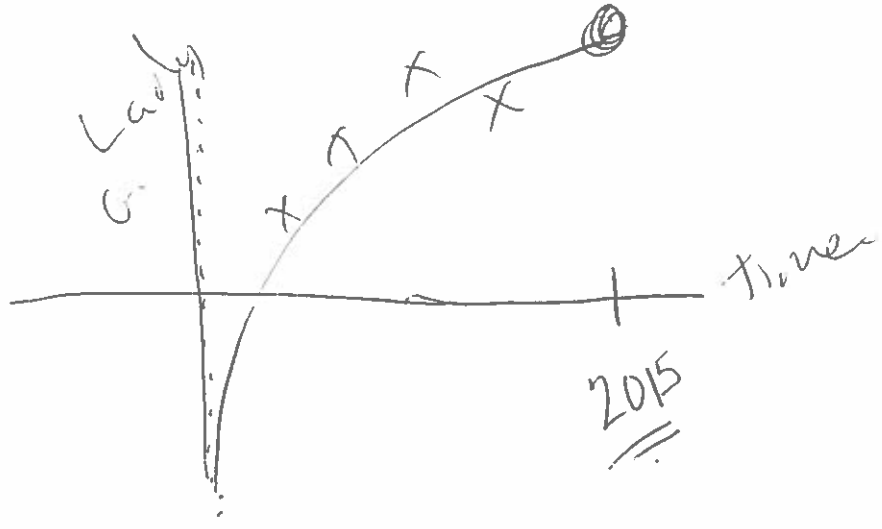
$$(f^{-1} \circ f)(x) = x = \ln(e^x)$$

$$x = \log_B(B^x)$$

$$x = B^{\log_B x}$$

- ① Start | Edit
 - ② Start > Calc
- 9: LnKey

X	y
0.1	



In 2015 Mike J.
 sells \$35.6 million
records want

GROUP NAME: Team Chem

Date: 03/11/14

Student Names (First and Last)

Speaker/Presenter: Clifford Busquin

Writer/Prep: Elija Amponso

Independent Variable (x-axis): Number of Car Sell

Dependant Variable (y-axis): Number of car

Leader/Collaborator: Elija Amponso

Conclusion (in words): if we sell car for 20. we will make more money.

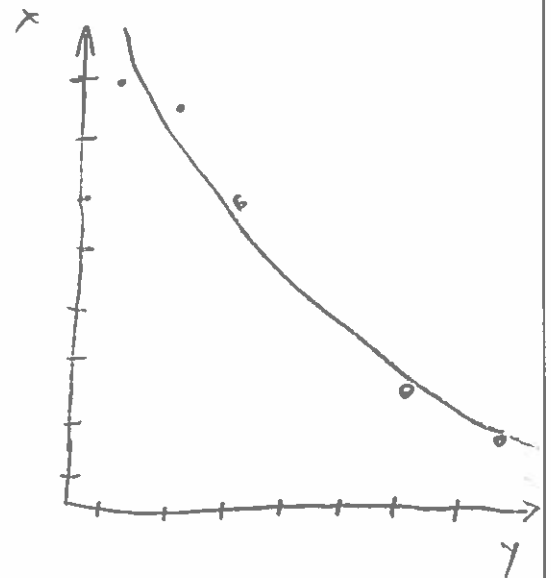
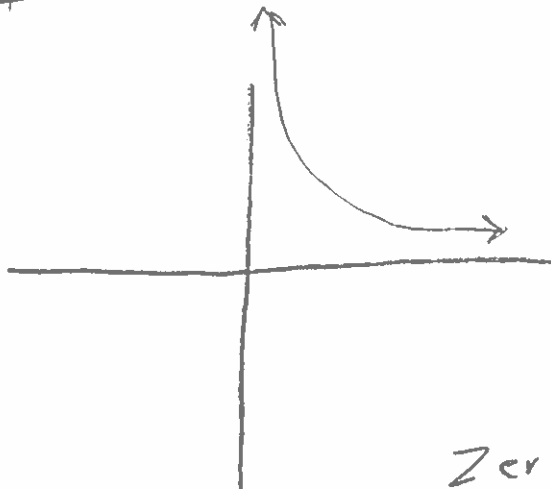
Supporting Work:

x	y
20	35
35	20
90	15
55	12
60	10
65	9

$$y = a + b \ln x$$

$$a = 233.6909538$$

$$b = -38.90411545$$



Zero

$$x = 406.19934 \quad y = \underline{\underline{0}}$$

GROUP NAME: Procedural Justice

Student Names (First and Last)

Date: 3/4/14

Speaker/Presenter: Dorian Hughes

Independent Variable (x-axis): Year

Writer/Prep: Allie Caplan

Dependant Variable (y-axis): NYC Population

Leader/Collaborator: Zollboero

Conclusion (in words):

NYC's pop

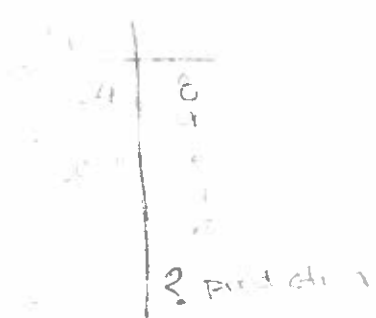
will be 21 million in 2015

Supporting Work:

Natural log

$$y = a + b \ln x$$

$$\ln \text{Pop} = -1.281... + (0.57... \ln x)$$



Range: 0 to 15
 2014-2015

Zero: $x = 1.234$

GROUP NAME: We Love Math

Student Names (First and Last)

Date: 3/4/14

Speaker/Presenter: Craig Sharracks

Independent Variable (x-axis): Time (Years)

Writer/Prep: Zachary Labbanz

Dependant Variable (y-axis): Number of Junkies in town

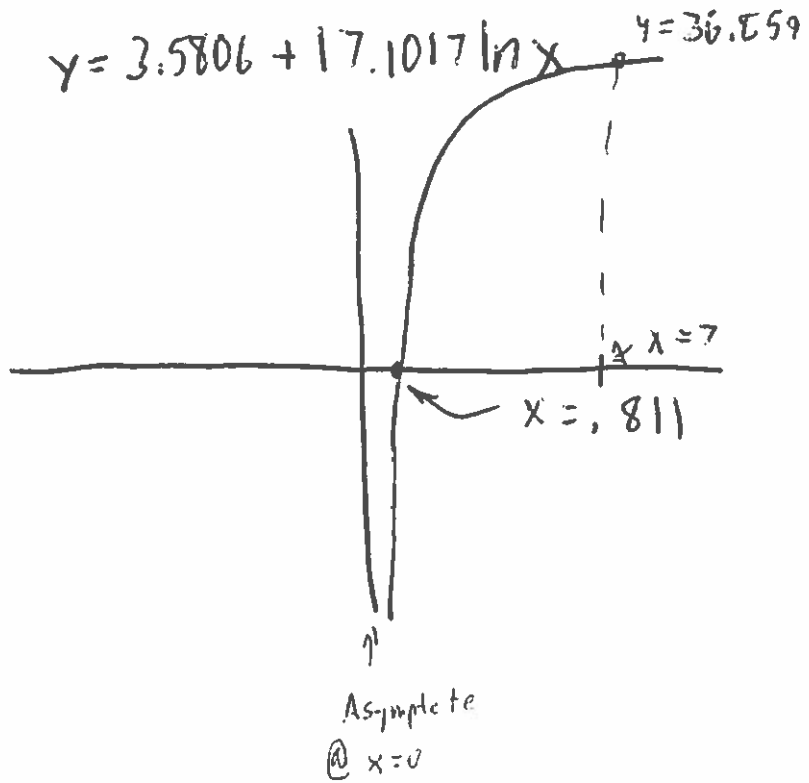
Leader/Collaborator: Lia-Yang Lin

Conclusion (in words): In 2015 there will be 37 junkies in the town.

Supporting Work:

	X	Y
(2009)	1	2
(2010)	2	17
(2011)	3	23
(2012)	4	29
(2013)	5	31
(2014)	6	32

↑
not in domain



GROUP NAME: This Group, Best Group

Date: 3/4/14

Student Names (First and Last)

Speaker/Presenter: Jose Johnson

Independent Variable (x-axis): Time (In ~~Years~~ ^{Months})

Writer/Prep: Billy Rafferty

Dependant Variable (y-axis): Price of Bitcoins

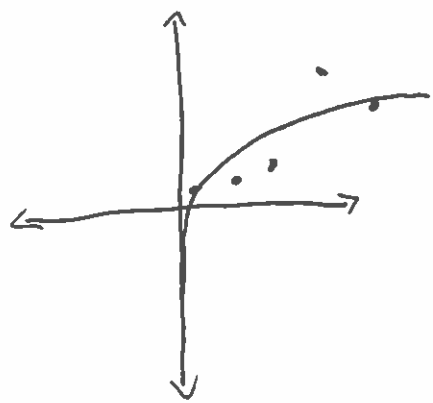
Leader/Collaborator: Stephen Burns

Conclusion (in words):
 In 1 year (12 more months) the price of Bitcoins will be \$2,731.40.

Supporting Work:

Data starting Jan 1, 2012

x	y
1	\$4.90
4	\$308.51
7	\$332.44
10	\$3,051.93
13	\$2,016.93



Ln Reg
 $y = a + b \ln x$
 $a = -425.362$
 $b = 980.704$

$y = 0$ at $x = 1.543$

GROUP NAME: Group 3

Date: _____

Student Names (First and Last)

Speaker/Presenter: Kevin Leonardo

Independent Variable (x-axis): height (inches)

Writer/Prep: Benjamin Infante

Dependant Variable (y-axis): weight (lbs)

Leader/Collaborator: Christian Guerra

Conclusion (in words):

if you weigh 320 lbs (according to this) you'll be 88 inches tall (7' 4")

Supporting Work:

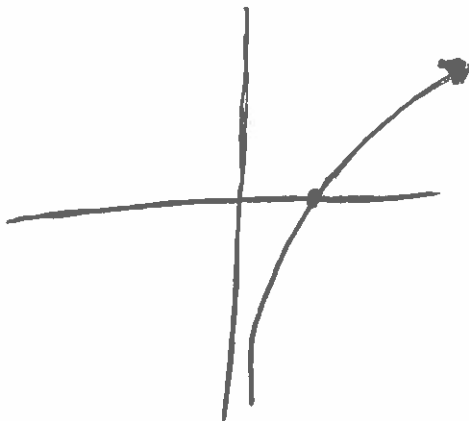
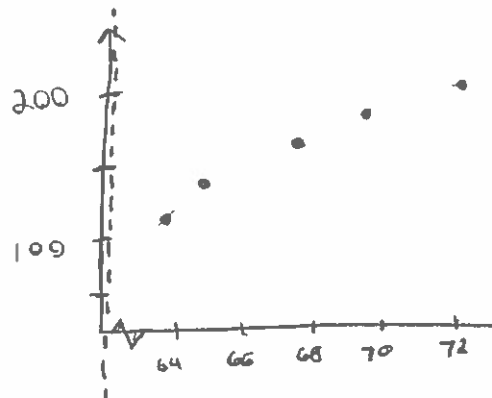
Data:

x	y
64	125
65	140
68	160
70	180
72	200

$$y = a - b \ln(x)$$

$$y = -2396.4 + 606.7 \ln(x)$$

zero: (51.9, 0)



GROUP NAME:

Student Names (First and Last)

Date: 1/24/11

Speaker/Presenter: _____

Independent Variable (x-axis): speed (mph)

Writer/Prep: _____

Dependant Variable (y-axis): mpg Dodge Ram

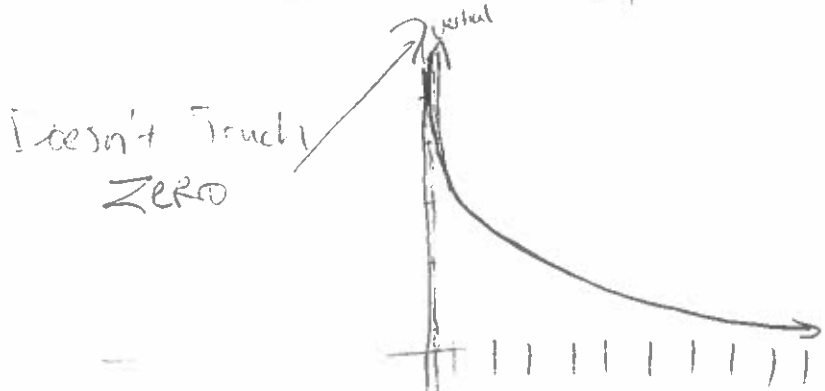
Leader/Collaborator: _____

Conclusion (in words):

traveling 60 mph your average mpg will be 22.286 mpg travel 50 mph you get 25 mpg

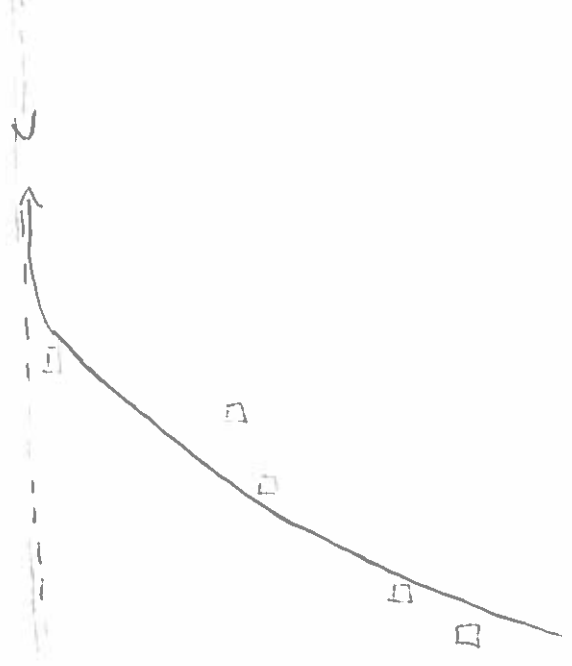
Supporting Work:

Calculator Interval [y] [1] [A] highlight Plot 1 GRAPH



x	y
60	22.286

L1	L2
25	30
45	28
50	25
65	21
70	19



GROUP NAME: we love science

Date: 3/4/14

Student Names (First and Last)

Speaker/Presenter: Yvette Aguilar

Independent Variable (x-axis): time (min)

Writer/Prep: Marta Trusekowska

Dependant Variable (y-axis): # cupcakes

Leader/Collaborator: _____

Conclusion (in words): In 545 min we can make ~~266~~ cupcakes we will make zero cupcakes in 14 min.

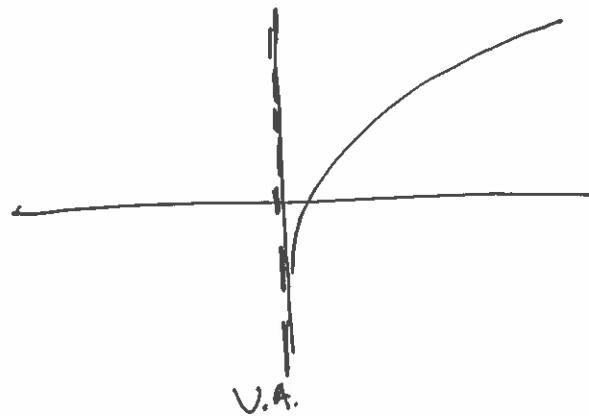
Supporting Work:

X	Y
24	24
48	35
72	47
96	67
120	78

stat \Rightarrow 9:

~~100.1... + 34.31... ln x~~
~~100.1... + 34.31... ln x~~

y = Vars 5: \Rightarrow \Rightarrow 1:



GROUP NAME: money bags

Student Names (First and Last)

Date: 3/4/14

Speaker/Presenter: _____

Independent Variable (x-axis): hours

Writer/Prep: Melissa S.

Dependant Variable (y-axis): bacteria growth

Leader/Collaborator: Kevin Enriquez

Conclusion (in words):

In 10 hours the amount of bacteria growth is 2380.6

Supporting Work:

L1	L2
4	5
8	25
12	130
16	656
20	3325
24	16834

STAT \rightarrow calc: 9?

Y= **VARS**
 \rightarrow \rightarrow \rightarrow 1:
graph

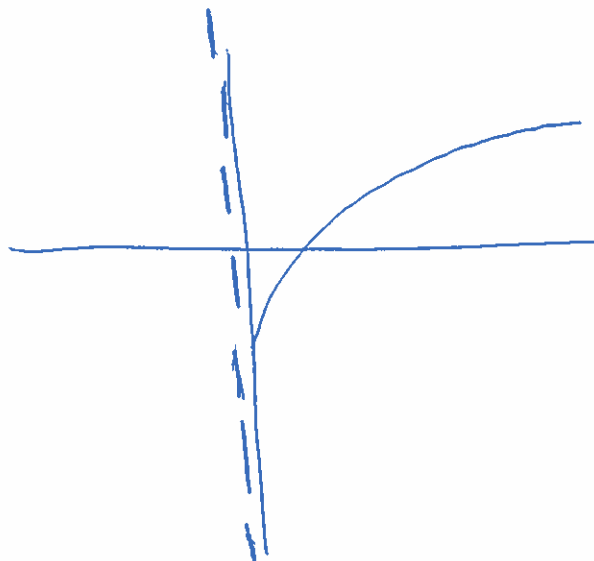
Ln Reg.

$$y = a + b \ln x$$

$$a = -11865.47951$$

$$b = 6187.002051$$

2nd **(B)iset**
2nd **graph**



Prediction

Hrs	
10	2380.6

Zero:

$$x = 6.80$$

$$y = 0$$

GROUP NAME: Math Lovers

Student Names (First and Last)

Date: 3/4/24

Speaker/Presenter: Osman

Independent Variable (x-axis): # price of watch

Writer/Prep: Kiarthika

Dependant Variable (y-axis): # watch's sold

Leader/Collaborator: Nisr Cheema

Conclusion (in words):

If we sell the watch for \$100, 90 people will buy the watch. If we sell the watch for \$280.87 then 0 people will buy it.

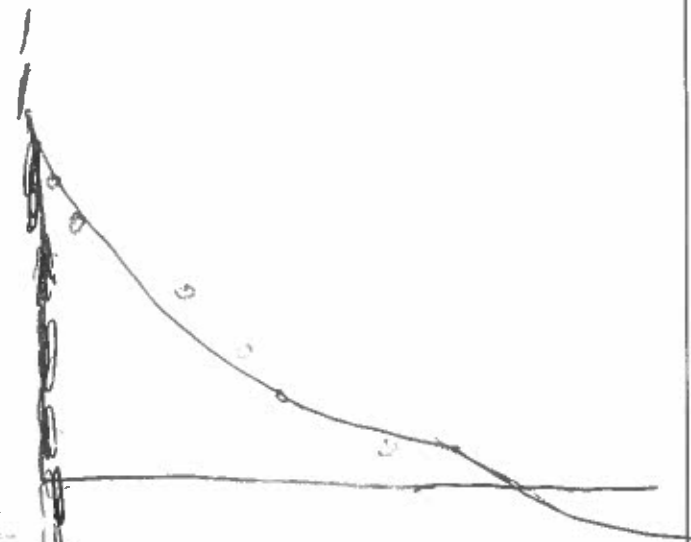
Supporting Work:

x	y
110	80
120	70
150	65
170	50
180	38
190	25

Ln Reg
 $Y = a + b \ln x$
 $a = 492.715$
 $b = -87.393$

$X = \$280.87$

$Y = 0$



Prediction

x	y _i
\$100	90.256