

Function

$$f(x) = x + 1$$

x	y
1	2
2	3

$$g(x) = x^2 \quad x > 0$$

x	y
2	4
4	16

Domain

$$h(x) =$$

x	h(x)
1	4
2	5

Domain: $\{1, 2\}$
Range: $\{4, 5\}$

Inverse Function

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

x	y ⁻¹
2	1
3	2

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

x	y ⁻¹
4	2
16	4

x	h ⁻¹ (x)
4	1
5	2

Domain: $\{4, 5\}$
Range: $\{1, 2\}$

Composite Functions

"Assembly Line"
of Jobs

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

$$f(g(x))$$

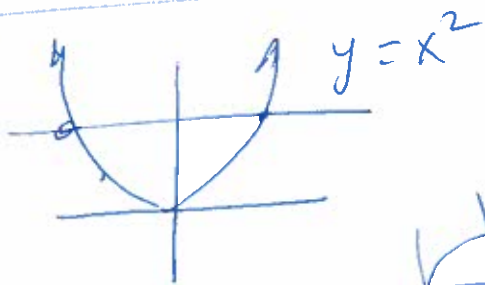
$$(g \circ f)(x) = \text{Stan}_g \left(\text{Scott}_f(x) \right)$$

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

$$(f \circ f^{-1})(16) = 16$$

$$(g^{-1} \circ g)(72) = 72$$

$$(\text{Scott} \circ \text{scott}^{-1})(2) = 2$$



① \rightarrow Solve for $x = \pm\sqrt{y}$
② \leftarrow NOT A FUNCTION

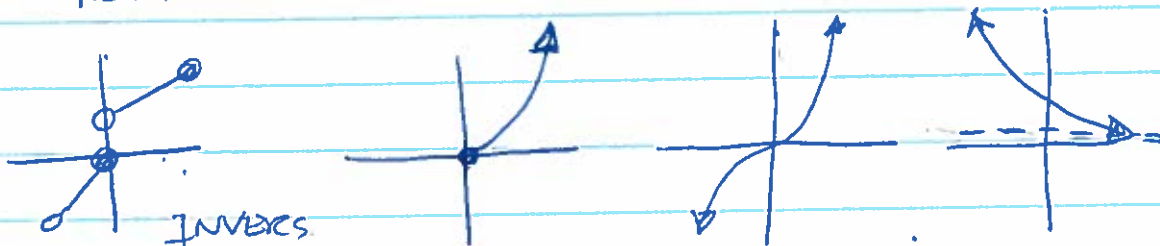
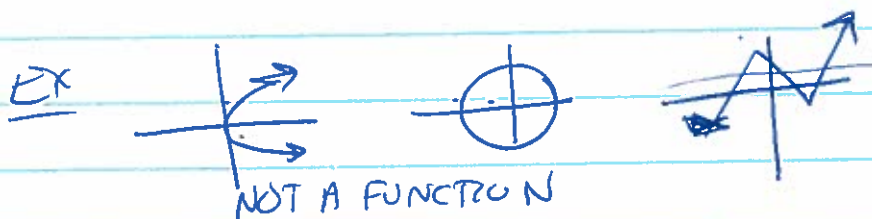
Rules for finding an Inverse:

① Solve for x .

② Switch $x \rightarrow y^{-1}$
 $y \rightarrow x$

Horizontal Line Test for Inverse Functions

If a graph passes the HLT,
Then the graph has an inverse.



A Function That has an inverse is
called 1 to 1.

1	4
2	5
3	6
③	⑥
2	4
2	5
④	⑥

← NOT 1 to 1

Function

$$y = B^x$$

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

Range: $(0, \infty)$

Point: $(0, 1)$

HA: $y = 0$

INVERSE

$$y = \log_B x$$

Domain: $(0, \infty)$

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

Point: $(1, 0)$

VA: $x = 0$

log base "B" of x

$$y = \log_B(x)$$

Property of Logs

① Definition

$$y = B^x \Leftrightarrow x = \log_B y$$

→ solve for an exponent
← get rid of "log"

Finding Logs on calculator

Common $\log(x) \equiv \log_{10}(x)$

Natural $\ln(x) \equiv \log_e(x)$

$$10^x = 100$$

Solve for x
①

Exponent Base
 $x = \log_{10}^{\downarrow}(100)$
= 2

$$3 = \log_2(x)$$

Get rid of log
①

Base Exponent
 $2^{\leftarrow} = x$

↑
BASE

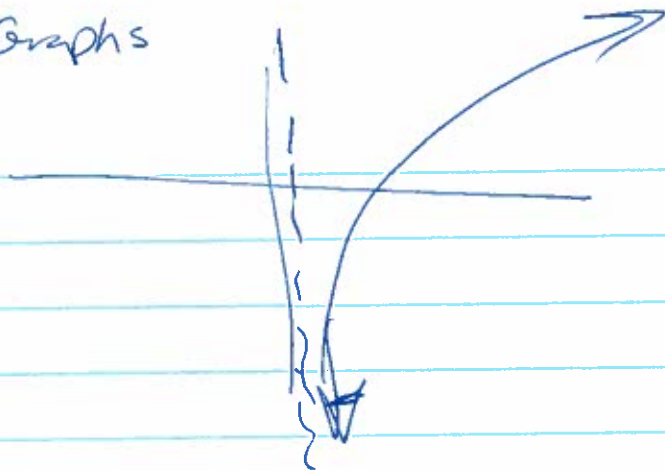
$$x = 8$$

④ Change of Base.

$$\log_B(A) = \log(A) / \log(B) = \ln(A) / \ln(B)$$

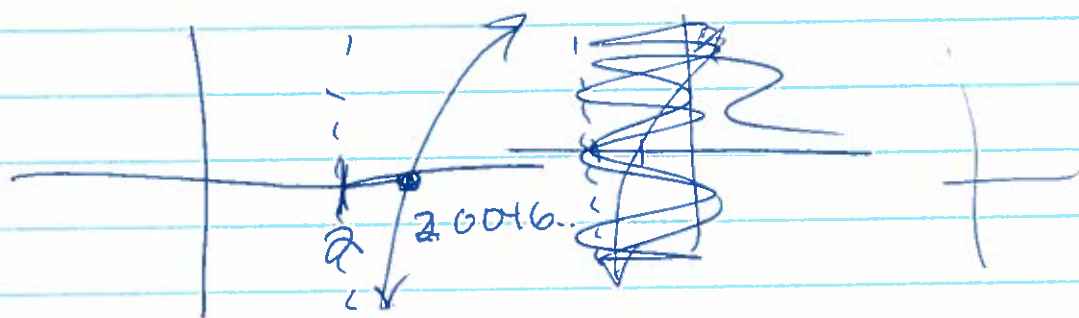
Ex Graph $\log_3(x) \Rightarrow y_1 = \log(x) / \log(3)$

Log Graphs



Left by "2"

$$y = 3 \log(x-2) + 7$$



$$3 \log(x-2) + 7 = 0$$
$$-7 = -7$$


$$\frac{3 \log(x-2)}{3} = \frac{-7}{3}$$

$$\log_{10}(x-2) = -7/3$$

← ①

$$10^{-7/3} = x-2$$

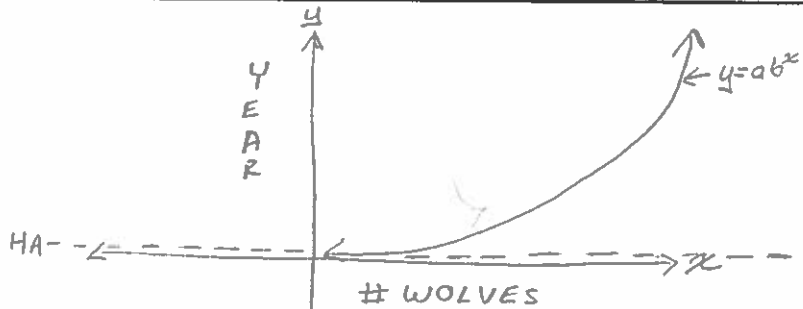
$$2 + 10^{-7/3} \approx 2.0046$$

GROUP NAME: 	Student Names (First and Last)
Logo:	Speaker/Presenter: <u>Natalie Castillo</u>
Date: <u>10/2/2013</u>	Writer/Prep: <u>LAUREN DOBO</u>
Topics: <u>WEREWOLF POPULATION</u>	QC/Leader: <u>DOMINIQUE</u>

Instructions:

INVERSE AND LOG FUNCTIONS

x	y
0.1	3
10	3.5
20	4.5



EXPONENTIAL REGRESSION

$$y = ab^x$$

$$a = 2.95...$$

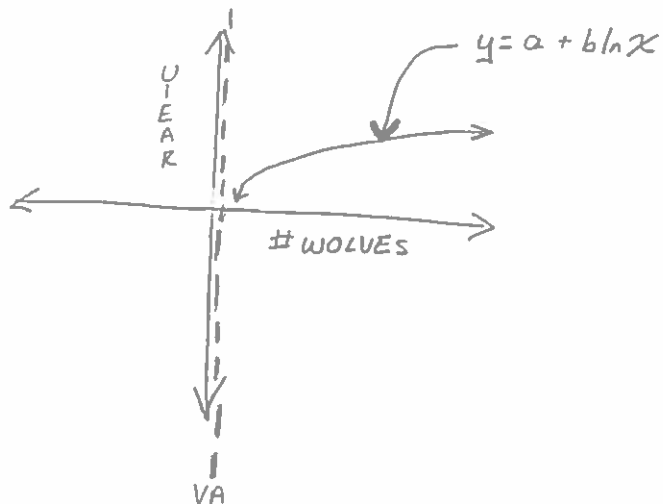
$$b = 1.02...$$

$$y = (2.95...)(1.02...)^x$$


INVERSE

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

$$a = 3.44...$$

$$b = 0.22...$$


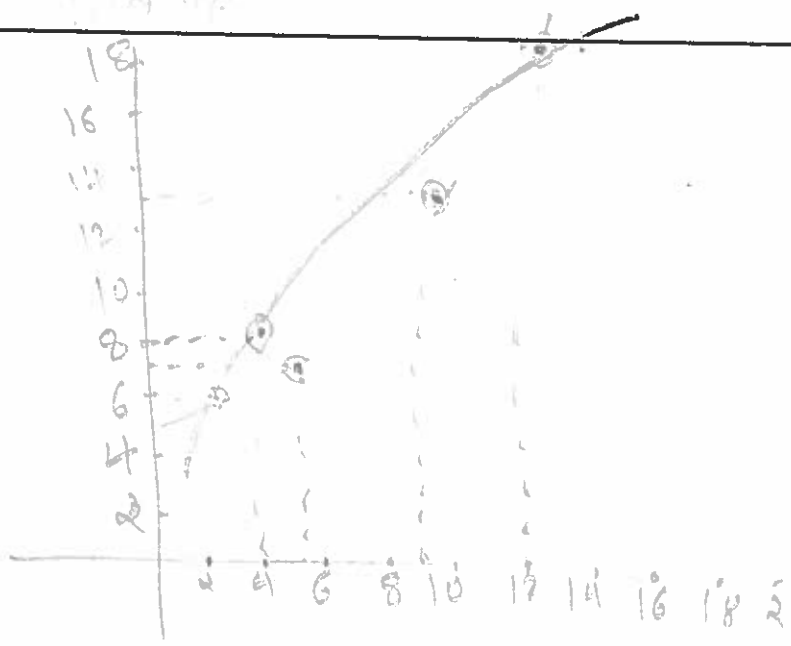
IN THE YEAR 2014, THERE WILL BE 369 WEREWOLVES

GROUP NAME: ILM Logo:  Date: 9/1/22 Topics: Inverse Function	Student Names (First and Last) Speaker/Presenter: Jake Pablon Writer/Prep: Hiral Dada QC/Leader: Kevin Velasco
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Instructions:

Product made by people
 2.025 people
 2.025 people

x	y
2	6
5	7
4	8
9	15
12	19
13	21
15	23
19	24



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

$$y = -3.70 + 9.12 \ln(x)$$

more people more phones

GROUP NAME: HOUSE STARK

Student Names (First and Last)

Logo: WINTER IS COMING

Speaker/Presenter: Onur Turhan

Date: 10/02/2013

Writer/Prep: Shanoy Isoe

Topics: LN - LOG

QC/Leader:

Instructions: ~~DATA~~ Movie wait time on Netflix Comp.

→ Movie wait time

Ram	Wait time
60GB	1 min.
30GB	3
15GB	5
5GB	10

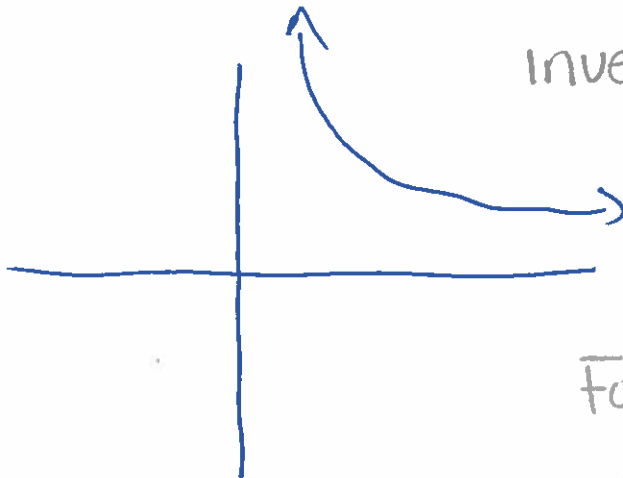
$$y = a + b \ln x$$

$$a = 15.42$$

$$b = -3.61$$

$$y = 15.42 \ln x^{-3.61}$$

Inverse is
10k



For .001 mb wait time
is 40 min

For .0001 tb wait time
is 49 min

→ To have no wait time you have to have 71 GB *

DISCLAIMER: Data is false lol

GROUP NAME:

Student Names (First and Last)

Logo:

Speaker/Presenter: Rex Liang

Date: _____

Writer/Prep: Mengyi Guo

Topics:

QC/Leader: Scott

Instructions:

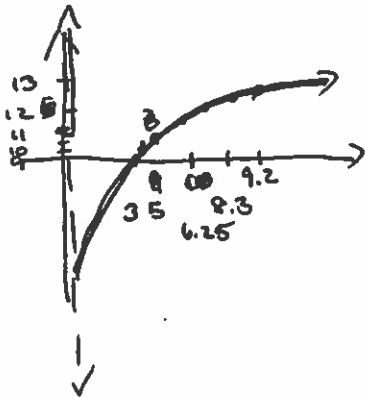
9	3
10	5
11	6.25
12	8.3
13	9.2

Ln Ln Reg

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

$$a = -34.57$$

$$b = 17.12$$



In the year 2014,
10.6 million phones will
 be sold

GROUP NAME:

Logo:

Date: 10/2

Topics: LN Regressions

Student Names (First and Last)

Speaker/Presenter: Stan Krdan

Writer/Prep: Valun Smold

QC/Leader: Danyan Zhou

Instructions:

(to make Graph)

STAT - CALC - OPT 9 - (LN Reg)

Enter

VF VARS OPT 5 (stats)

Enter over 3 (EQ) opt 1 (RegEQ)

Graph

(Solver)

MATH - B (solver) ^ clear

VARS OPT 5, EQ, added (-4)

change x to .14 (for 2014)

goto y and press Alpha Enter

y = 8.01...

In 2014, 8.01 million ^{Google} glasses will be sold.

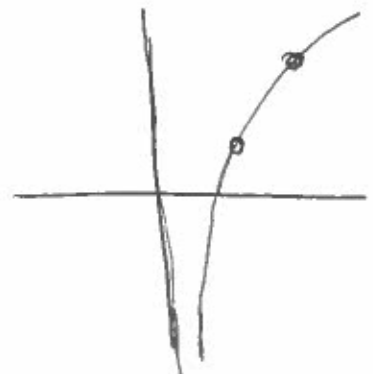
LN REG ▽

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

$$a = -27.87...$$

$$b = 13.59...$$

x	y
9	2
13	7



GROUP NAME:

Logo:

Date: _____

Topics:

Student Names (First and Last)

Speaker/Presenter: Nicole Bonelli

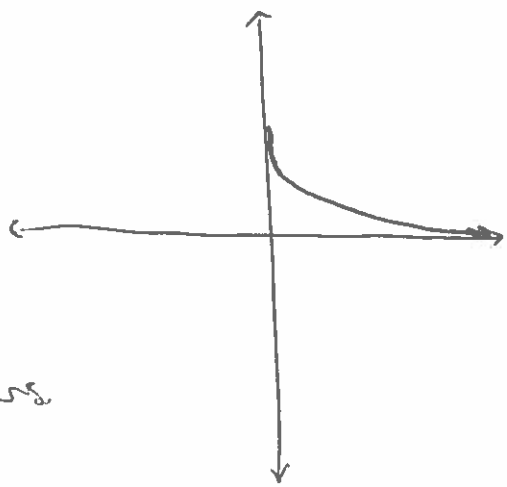
Writer/Prep: Avik Khareja

QC/Leader: _____


Instructions: Log \Rightarrow Ln Reg

Shoe Price	# Consumers
\$22	67
\$36	52
\$42	31
\$53	24
\$68	6

Ln Reg
 $y = a + b \ln x$
 $a = 239.55 \dots$
 $b = -54.71 \dots$
 $y = 239.55 \dots - 54.71 \dots x$

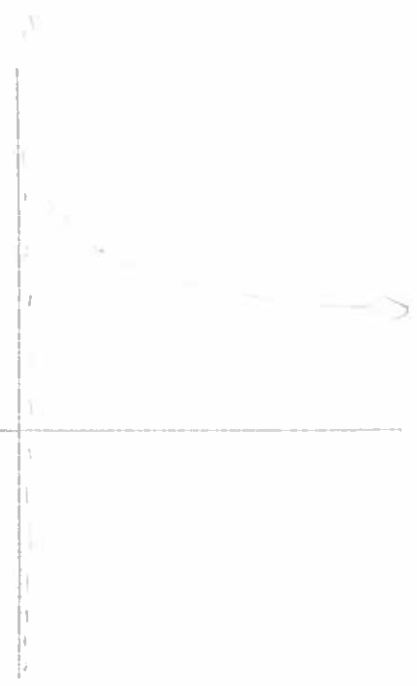


at \$38 there are
 40.53 consumers.

<p>GROUP NAME:</p> <p>Logo: </p>	<p>Student Names (First and Last)</p> <p>Speaker/Presenter: _____</p>
<p>Date: <u>11/13</u></p> <p>Topics:</p>	<p>Writer/Prep: <u>Vinnie Auhad</u></p> <p>QC/Leader: <u>Harrison Escher</u></p>

Instructions: Joe Kramling

1960	100
1970	97
1980	84
1990	62
2000	51
2010	25



In the year 1991, 60 transistors were produced

In the year 2031, 0 Transistors were produced.

25.75 Transistors were produced in the year 2013.

GROUP NAME: <u>Rachel Joyce</u>	Student Names (First and Last)
Logo:	Speaker/Presenter: <u>Kousaku</u>
Date: <u>10/2/13</u>	Writer/Prep: <u>Rachel J.</u>
Topics:	QC/Leader: <u>Valerie</u>

Instructions:

L_2	L_3
20	300
30	400
40	500

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

$$y = -560.80 + 285.8 \ln x$$

