

Pre calculus = Study of Functions

Function = JOB

INPUT (Domain)

OUTPUT (Range)

3 Ways to Represent a Function

1. Data

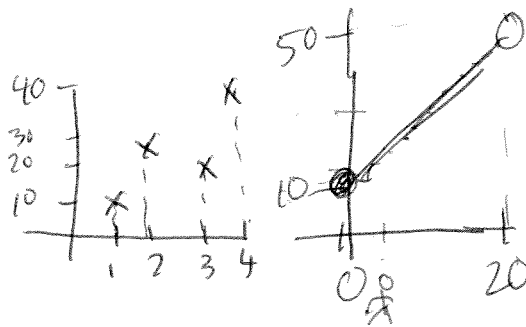
L1	L2
\$ 50	5
\$ 100	3
\$ 150	1

IN
Price = \$ 50
OUT ↓
Sales = 5

Domain
 $\{50, 100, 150\}$

Range
 $\{5, 3, 1\}$

2. Plot / Graph



Domain
 $\{1, 2, 3, 4\}$

Range
 $\{10, 20, 30, 40\}$

Domain
 $[0, 20)$

Range
 $[10, 50)$

3. Equations

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

Domain: \mathbb{R}
or
 $(-\infty, \infty)$

Range: (Graph on
calculator &
look)

Domains

1. No Divide
by zero

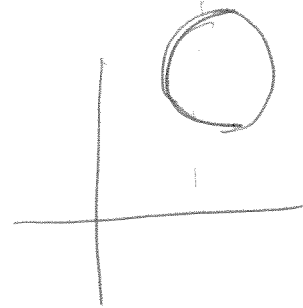
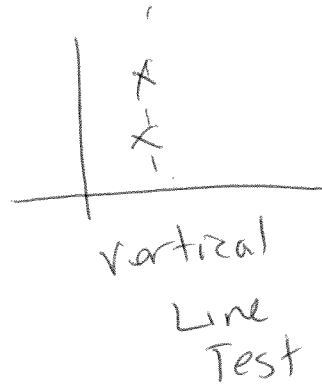
2. No sq. roots
of Neg. Numbers

Not A Function

Dirty Dish	1	2
Dirty Sc	1	3

Clean Dish

Broken Dish

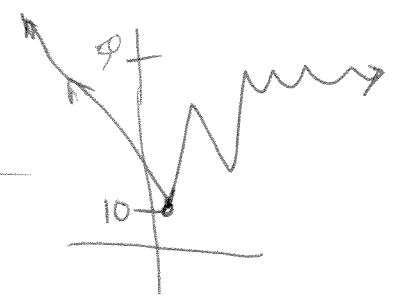
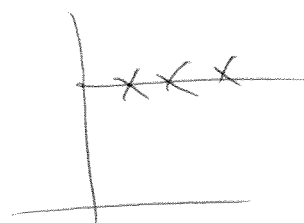


IS A Function

Bowl	2	1
Plate	3	1

Broken Dish

Broken Dish



Domain

$$(-\infty, \infty)$$

Range

$$[10, \infty)$$

Vertical Line Test
For Functions

Domain

EX $f(x) = \frac{1}{x^2 - 4}$

Domain: $x^2 - 4 \neq 0$
 $x \neq 2, -2$

EX $g(x) = \sqrt{x + 5}$

Domain $x + 5 \geq 0$
 $x \geq -5$

$$g(-4) = \sqrt{-4 + 5} = \sqrt{1} = 1$$

Evaluate

vs. Solve

$Y_1 =$ Regression Function

$$Y_1(1986) = 5.00$$

Methods

1. Trace (✓) 1986

2. Calc = 2nd Trace

Calc 1: Value $X = 1986$

3. Table = 2nd Graph

* Tblset 2nd Window

Start = 1986

OR

Auto \rightarrow Ask

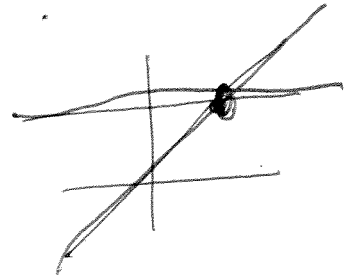
Intersection Method

$$\underbrace{3x + 2}_{Y_1} = \underbrace{7}_{Y_2}$$

Y=

$$Y_1 = 3x + 2$$

$$Y_2 = 7$$



Zoom 6: Stand

Calc 5: Intersect (center)

1st cur:

2nd cur:

guess:

(center)

(center)

(center)

$$X = 1.666\dots = 1\frac{2}{3} = \frac{5}{3}$$

Solver Method

Math B: Solver

$$0 = \underbrace{3x + 2} = \underbrace{7}$$

center \rightarrow

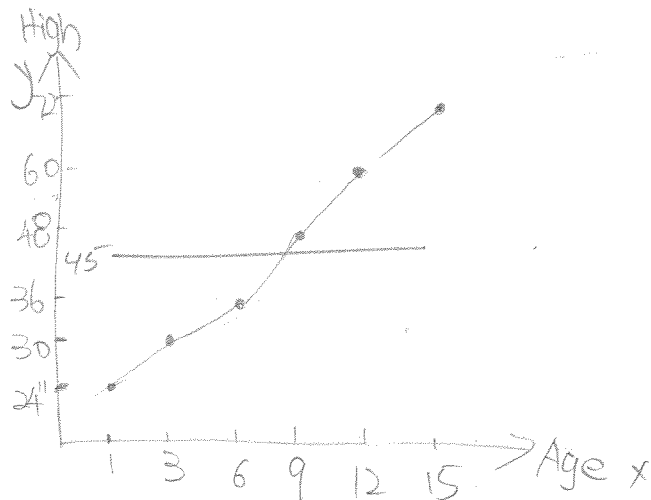
Alpha (center)

$$\text{= } X = 1.666\dots$$

<p>GROUP NAME: <u>I love Math</u></p> <p>Logo: <u>+ - x ÷</u></p>	<p>Student Names (First and Last)</p> <p>Speaker/Presenter: <u>Scott</u></p>
<p>Date: <u>8/28/13</u></p> <p>Topics: <u>Evaluating Functions</u></p>	<p>Writer/Prep: <u>Lucy</u></p> <p>QC/Leader: <u>Rex</u></p>

Instructions:

Age	High
1	24"
3	30"
6	36"
9	48"
12	60"
15	72"



Quad
Reg.

$$F(7) = 40.705 \dots$$

At age 7 you should approx be 40.705 inches

$$F(26) = 134.21$$

At age 26 you should approx be 134.21 inches

$$45" = 8.26 \text{ years old}$$

When your 45 inches tall you are 8.26 years old

GROUP NAME: <u>TTD</u>	Student Names (First and Last)
Logo:	Speaker/Presenter: <u>Trey</u>
Date: <u>8/28/13</u>	Writer/Prep: <u>Tatiana C.</u>
Topics: <u>iphones</u>	QC/Leader: <u>DOMINIQUE</u>

Instructions:

Data

(L1)(L2)

X	Y
2012	35
2011	20
2010	9
2009	9
2008	6

regression

Plot data

Stat (→)

Quad ratic Regression

12	35
11	20
10	9
9	9
8	6

Graph

2nd (Calc) (Stat) (Calc) 5

in 2034, solve

Enter $y' = 2.5x^2 - 43.1x + 191.8$

$Y_2 = 30$ number of iphones (in millions)

Graph

2nd trace

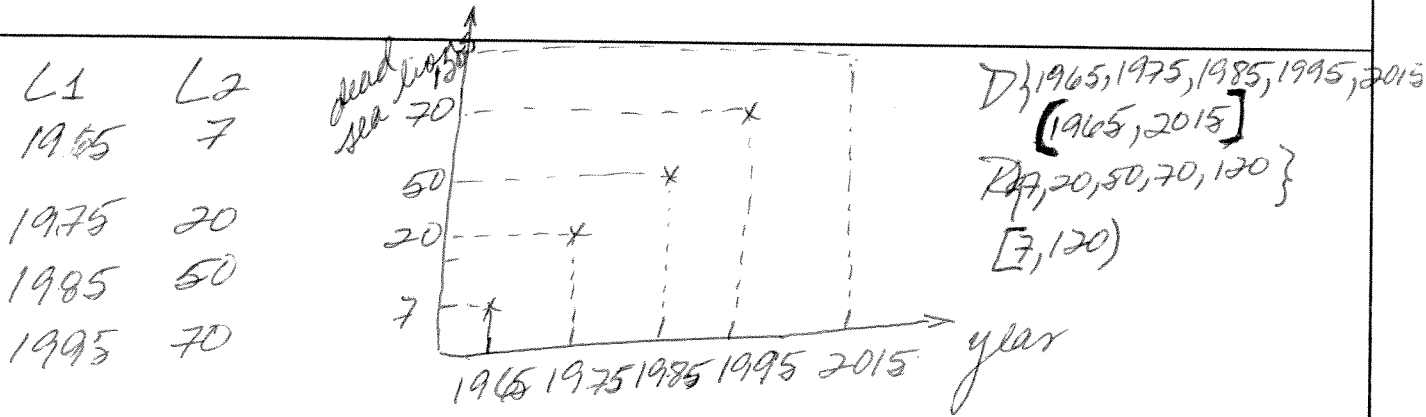
2nd 1st 2nd 3rd Enter Enter Enter

11.7701 $y = 3.715$

30 million iPhones we will sell by 2012

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter: _____
Date: <u>08/28/2013</u>	Writer/Prep: <u>Valerie Spangler</u>
Topics:	QC/Leader: <u>Yelena Bermudez</u>

Instructions:
 1. Put data in the calculator
 2. Plot the points into the graph



2047 = 75 dead sea lions

predicted 120 dead sea lions in 2015

Since the year 1965 the lions sea dead in the North Pole has increased as a result of the pollution in the ocean and the lack of available food. The ILO organization IAT 146 predicted that in 2015 there'll be 120 lion sea deads because of this cause. A posterior study made showed that the number will be higher: 180 deads of lions sea.

turned out to be about 180 dead sea lions

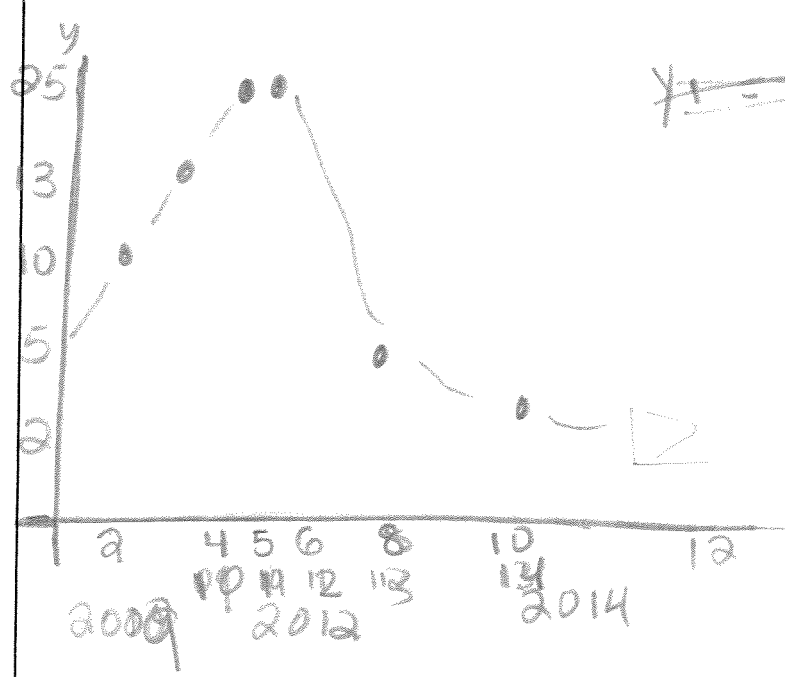
line of regression = 66.52...

GROUP NAME: <u>Jazz</u>	Student Names (First and Last)
Logo: <u>Jazz</u>	Speaker/Presenter: <u>Both</u>
Date: <u>8/24/14</u>	Writer/Prep: <u>Sharon Isoe</u>
Topics: <u>Quadratic Regression</u>	QC/Leader: <u>Kenline Kay Simon</u>

Instructions: - Sample sale of ^{Jazz} CD's in ~~groups~~ in teen groups in the year 2014 ^{Jazz}

$y = ax^2 + bx + c$
 $a = -0.9437229437$
 The amount of
 $b = 9.998268396$
 $c = -6.4545454$
 $R^2 = .669615421$

x	y
2	10
4	13
5	25
6	25
8	5
10	2
12	?



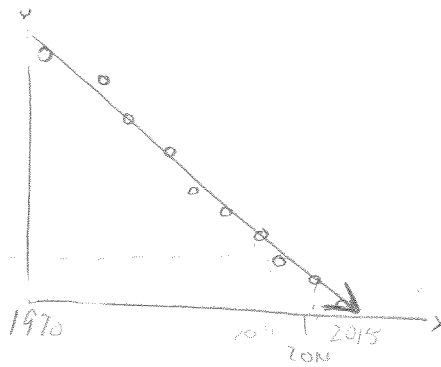
~~$y = -0.9437229437x^2 + 9.998268396x - 6.4545454$~~
 $\gamma^2 = 30$

Predicting sales
 drop near future

<p>GROUP NAME: <u>The Birthday Massacre</u></p> <p>Logo:</p>	<p>Student Names (First and Last)</p> <p>Speaker/Presenter: <u>Natalie Cashio</u></p>
<p>Date: <u>8/28/13</u></p> <p>Topics: <u>in mercer county</u> <u>WOLF EXTINCTION</u></p>	<p>Writer/Prep: <u>LAUREN DORO</u></p> <p>QC/Leader: _____</p>

Instructions:

X YEAR	Y POPULATION
1970	86252
1975	84983
1980	82427
1985	80689
1990	78532
1995	76784
2000	74596
2005	72727
2010	70340
2015	68690



AS THE YEARS INCREASE,
THE WOLF POPULATION
DECREASES.

1970-86252 WOLVES
1990-78532 WOLVES
2010-70340 WOLVES

$$y = ax^2 + bx + c$$

Evaluate

PREDICTION: 2014-68949

x =

Intersection Solve
 $x = 2011 \dots$ $y = 70000$

$$y_1 = \text{regteq}$$

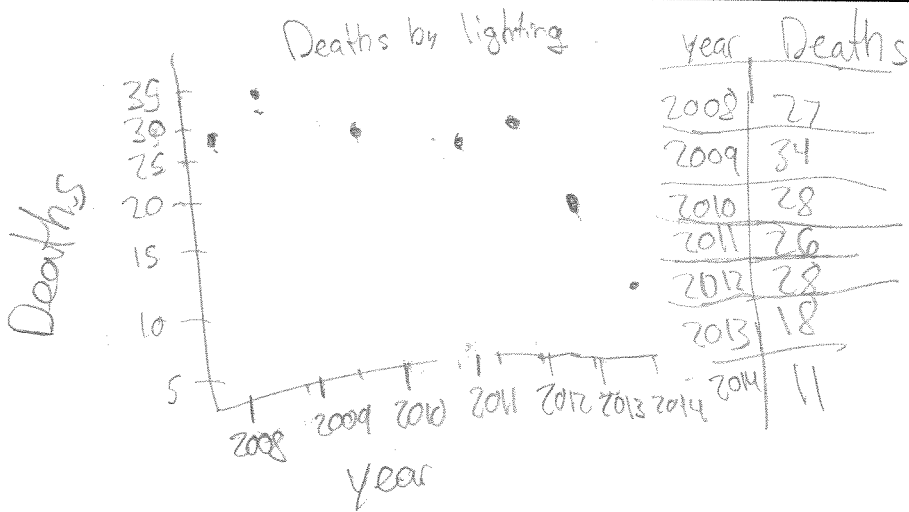
$$y_2 = 70,000$$

Calc 5: Inte. sect (enter) (x3)

$$x = 2011 \dots \quad y = 70,000$$

GROUP NAME: <u>Taco Bell</u>	Student Names (First and Last)
Logo:	Speaker/Presenter: <u>Brandon Rivera</u>
Date: <u>8/28/2013</u>	Writer/Prep: <u>Darsh</u>
Topics:	QC/Leader: _____


Instructions: Predict the Deaths by lightning, in year 2014



Regression
 $y = a \times b^x$
 $a = -1.857142857$
 $b = 3760.619048$

$x = 20011.9$
 $y = 25$

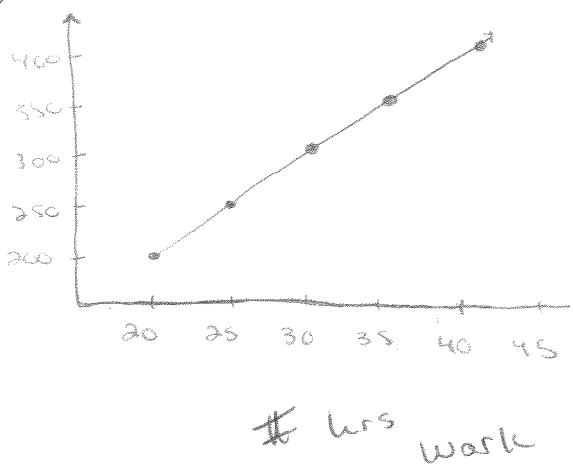
25 people will die by 2011

<p>GROUP NAME: <u>Business Gang</u></p> <p>Logo: </p>	<p>Student Names (First and Last)</p> <p>Speaker/Presenter: <u>Jon Sebino</u></p>
<p>Date: <u>8/28/13</u></p> <p>Topics: <u>We will predict how much \$ you will make when you work 32 hrs</u></p>	<p>Writer/Prep: <u>Nicole Bonelli</u></p> <p>QC/Leader: <u>Avik Khareja</u></p>

Instructions: 

Amount \$ made

hours	income \$
20	\$200
25	\$250
30	\$300
35	\$350
40	\$400




function

$$y = 10x + 0$$

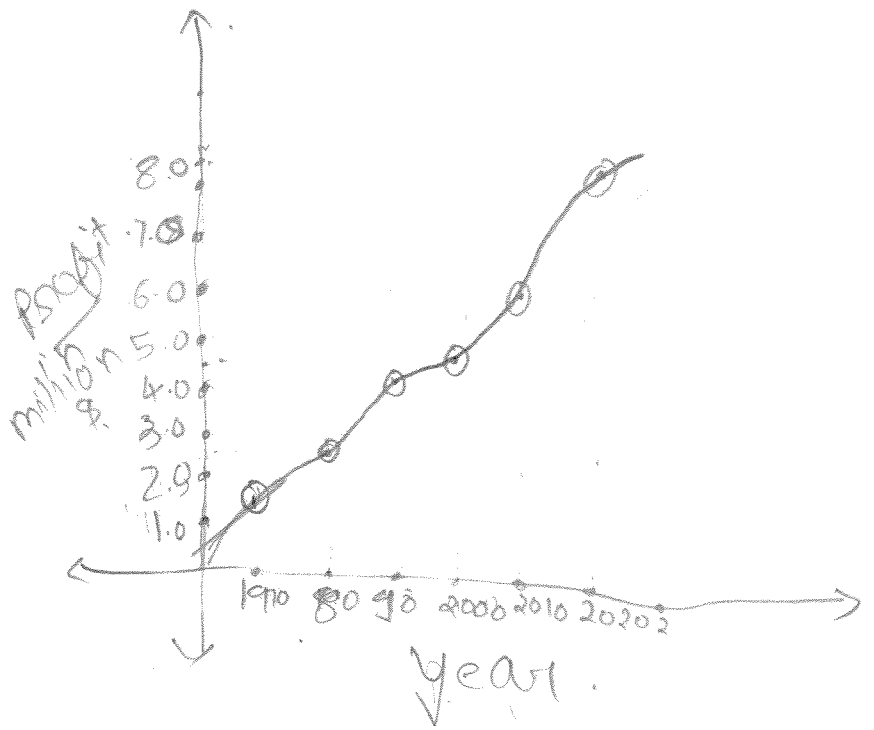
How much money do you make if you work 32 hrs?

10 if you work 32 hours you will make \$320

GROUP NAME: <u>ILM.</u>	Student Names (First and Last)
Logo: 	Speaker/Presenter: <u>Jake</u>
Date: <u>8/28/2013</u>	Writer/Prep: <u>HIRAL</u>
Topics: <u>Profits In a Restaurant</u>	QC/Leader: <u>KEVIN</u>

Instructions:

x	y
1970	1.5 m.\$.
1980	2.5 mil.
1990	4.0 m.
2000	4.5 m
2010	6.0 M.
2020	8.0 m\$.
2030	

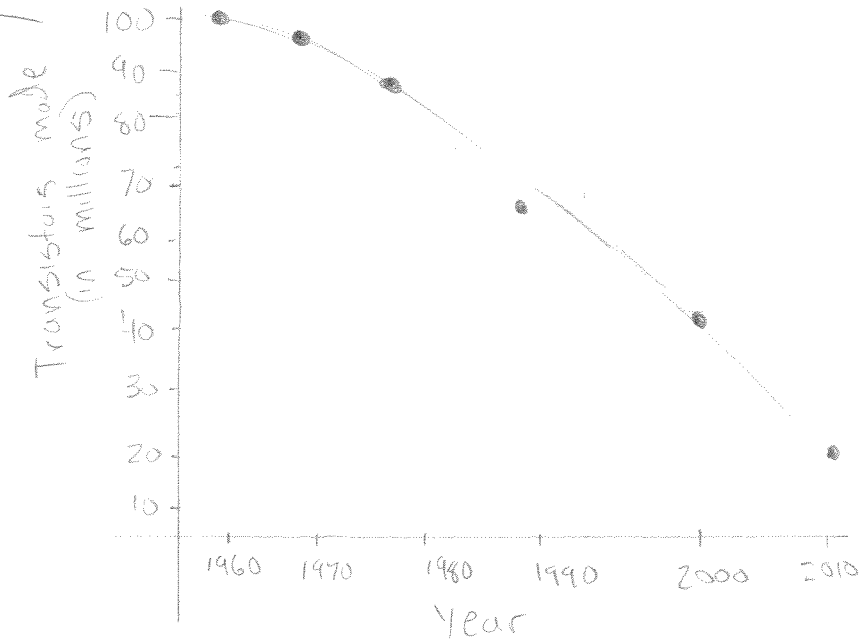


GROUP NAME: SA ENGINEERS	Student Names (First and Last) Harrison Sanders
Logo:	Speaker/Presenter: Joe K
Date: 8/28/13	Writer/Prep: Vinnie Avhad
Topics: Transistors made in the year X	QC/Leader: JIM KUKOW

Instructions:

Transistors Made (in Millions)

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



When will they stop making transistors?
2019

How many Transistors will they make in the year
1993

61.954821 million

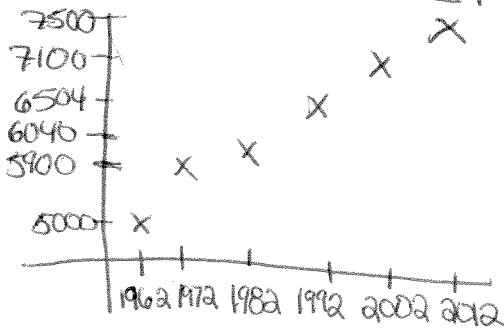
GROUP NAME: <u>Science</u>	Student Names (First and Last)
Logo: <u>Beaker</u>	Speaker/Presenter: <u>Rachel & Kausakua</u>
Date: <u>2/28/13</u>	Writer/Prep: <u>Rachel, Valerie, Yelena</u>
Topics: <u>Dolphin extinction every 10 years</u>	QC/Leader: <u>Alex</u>

Instructions:

L1	L2
1962	5,000
1972	5,900
1982	6,040
1992	6,504
2002	7,100
2012	7,500

Starting at year 1962 the ~~went~~ dolphins ~~went~~ ^{died off} by 5,000 dolphin within 10 years.
 In 1972, 5900 went extinct.
 In 1982, 6040 went extinct.
 In 1992, 6,504 went extinct.
 In 2002, 7100 went extinct.
 In 2012, 7500 went extinct.

* died off not went extinct



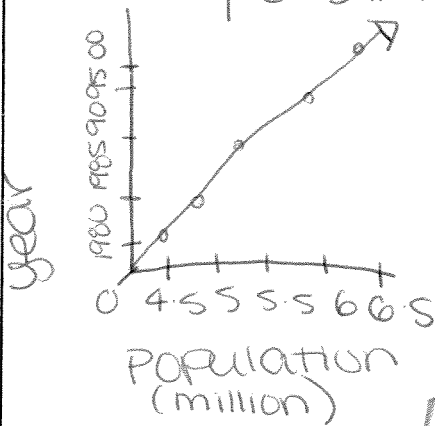
for $x=1969$
 $y=6328$
 $x=2013$
 $y=7524$
 $x=2000.66$
 $y=7,000$

GROUP NAME: <u>Business crew</u>	Student Names (First and Last)
Logo: <u>BC</u>	Speaker/Presenter: <u>Stev Kaplan</u>
Date: <u>2/28/13</u>	Writer/Prep: <u>Valeen Sinclair</u>
Topics: <u>Evaluating Regression function</u>	QC/Leader: <u>Danyan Zhou</u>

Instructions: We will predict the population for the year of 1989.

year	Population
1980	4.5 million
1985	5 million
1990	5.5 million
1995	6 million
2000	6.5 million

In 1989 we predict the population will be ~~4.8 million~~ ~~4.2 million~~ million.



On Valeen's birth year, the population was 5.4 million.
Birth year is 1989

