

MAT146 PRECALCULUS

Prof. Porter

HYBRID

AGENDA

Introductions

Lecture

Teamwork

Review

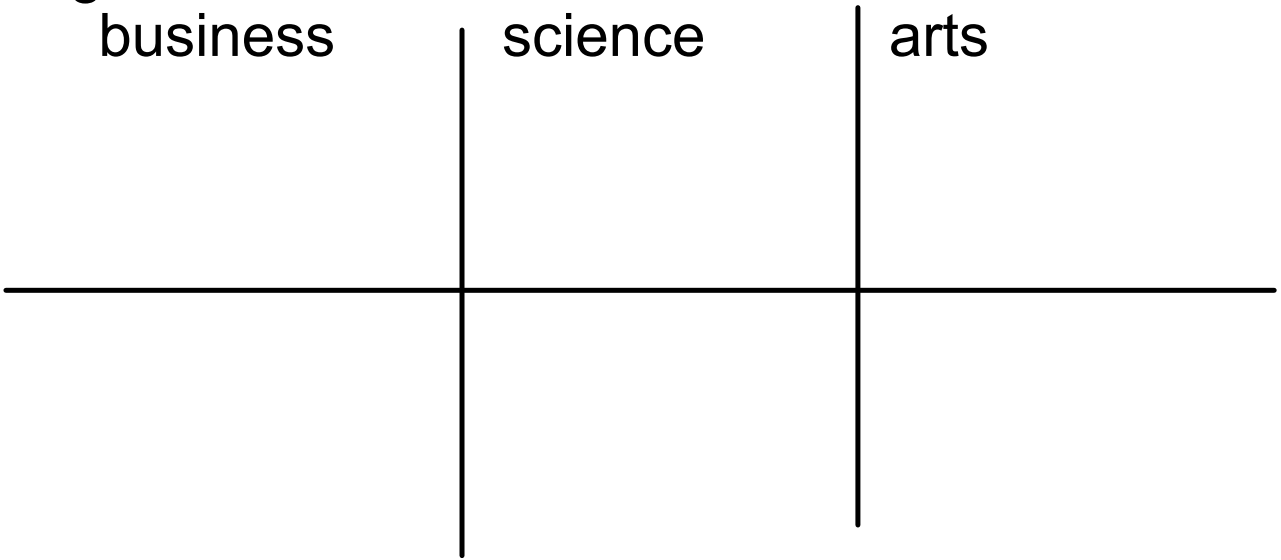
Introductions:

Prof. Porter "I ..."

Sign-in Wall:
business

science

arts



Lecture

MATH =
Precalculus =

MATH = LANGUAGE
Precalculus =

MATH = LANGUAGE

Precalculus = Study of Functions (jobs)

Functions =

MATH = LANGUAGE

Precalculus = Study of Functions (jobs)

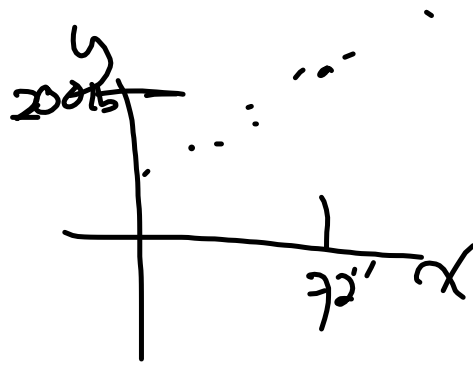
Functions = Data, Graphs, Equations

Data Input = domain
 output = range

Ordered Pair (input, output)

Examples: (dish, clean dish)
(dish, broken dish)
(pot, broken pot)
(2015, \$500000)
(72",200lbs)

Graph = Plot or Curve



Equation $f(x) =$

Evaluate = plug in an x value find $f(x)$

Solve = Pick a y value to find x

You?

1. Go to BB week 1.
2. Complete assignments
ALEKS
+
Discussions

Groupwork

Pick a Team

Pick a team name

Pick a relevant data set

Define the units

Assign task

TEAMS

Producer

Math
Writer

Speaker

Picture of Situation

Mathematical Equation

Words

How to get on calculator:

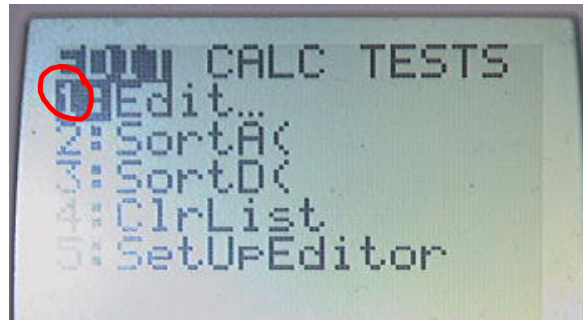
Example:

Selling Calculator

Price	Sold
\$ 80	3
\$ 75	4
\$ 70	5
\$ 65	7
\$ 60	12

ENTER
DATA

STAT 1:



Graph (Plot)

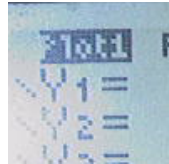
Zoom 9:



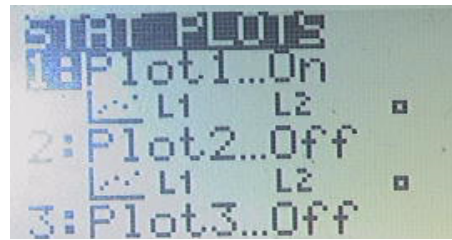
9: zoomstt

Plots (on)

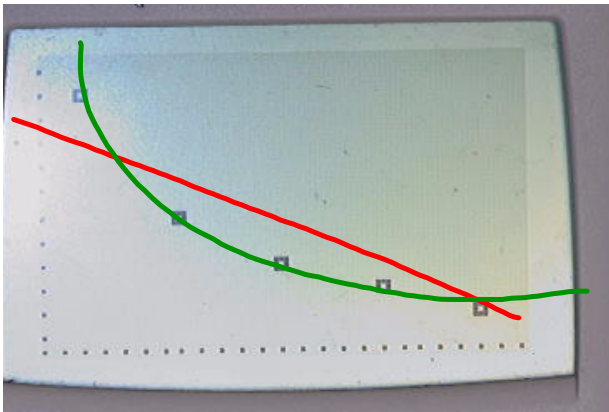
Y=



2nd **Y=**



1: **ZWTR**

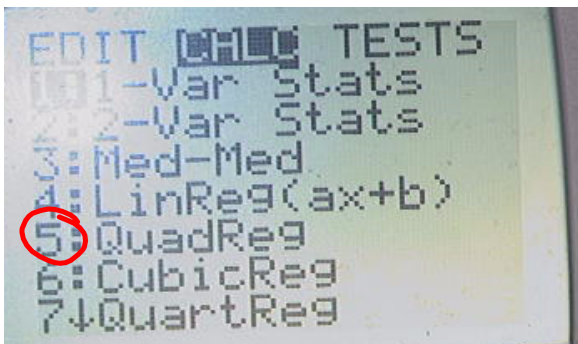


Linear Function
Not so good

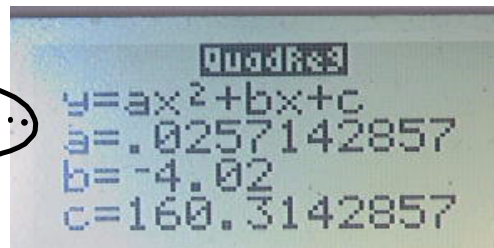
Parabola
Quadratic

Regression Equation
Data → Function Equation

STAT \rightarrow Calc 5: Quad Reg



$$y = .025 \dots X^2 - 4.02x + 160.3 \dots$$

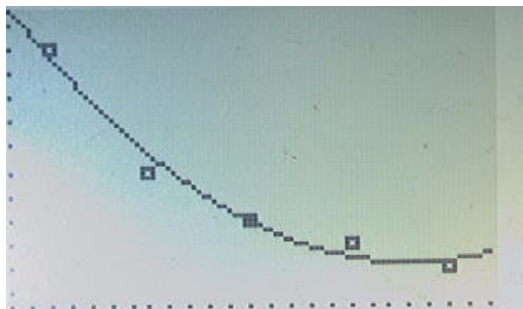


Graph Equation

$Y=$ | $VARS$ | S : \rightarrow \rightarrow | \rightarrow $RegT$

```
Plot2 Plot3
\Y1= .02571428571
428X^2+ -4.02X+16
0.31428571429
\Y2=
```

Graph



Predictions

$$X = \# \text{ \underline{value} } Y \text{ \underline{\hspace{2cm}}}$$

If I charge \$ SS expect $\bar{Y} =$

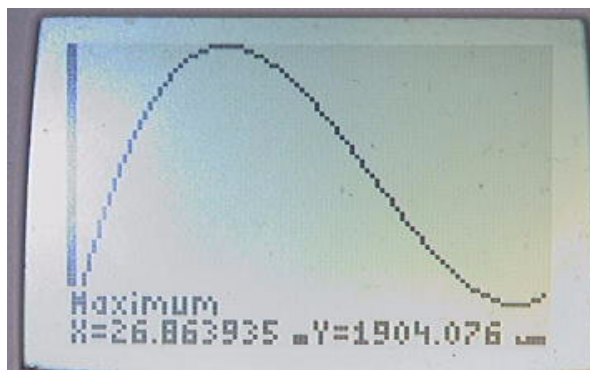
$$X = \text{ \underline{\hspace{2cm}} } \text{ Solve. } Y = \#$$

Evaluate.

2nd Graph = TABLE

X	Y1
50	23.6
51	22.177

" If I charge \$50 for a
calculator -- I expect to
sell ~24 "



Use "Solver"

Math 0: Solver (or B:)

0= "Vars" "5:" ">" ">" "1:" "-" "y"

Making a Prediction:

1. Table

2. Calc 1: value 2nd trace

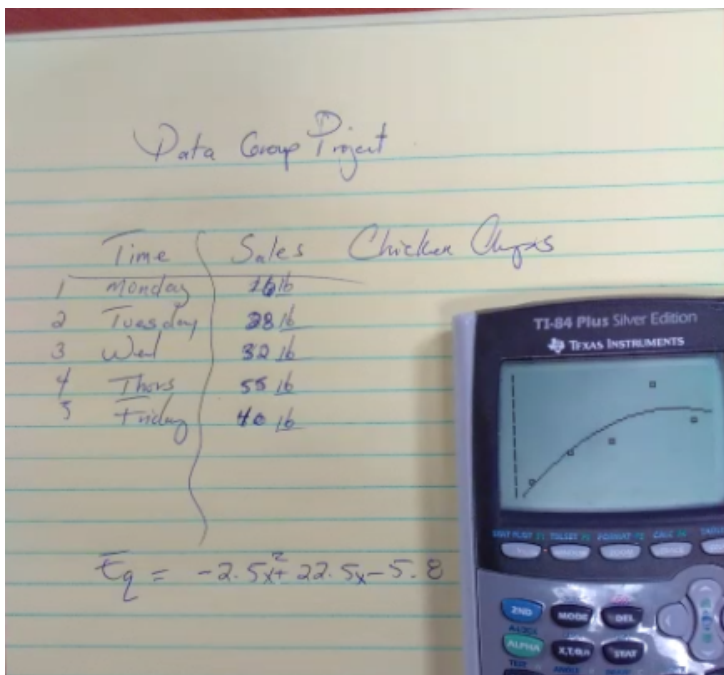
3. vars > 1: 1: (40)
 $Y_1(40)$

TABLE SETUP
TblStart=40
 Δ Tbl=1
Indent: [Auto] Ask
Depend: [Auto] Ask

X	Y1	Y2
40	18.8	40.657
41	18.38	38.72

If I charge \$40 for calculator, I can expect to sell 19 using a linear regression, or 41 using a quartic regression

Student Examples



X=6(saturday)

On Saturday ,
according to the
quad regression
and the data give,
we expect to sell
25lbs

y = 35 lbs

according to the quad
regression and the data given,
we sell 35lbs x= 3.5(between
Wednesday and Thursday

Tania
Lauva
desiree

height / weight

	y	x
5'8"	16	174.4
5'5"	16	225.2
5'8"	16	160.5
6'1"	16	280.3
5'7"	16	170.2

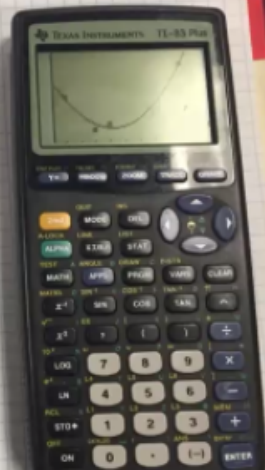
Quad Reg

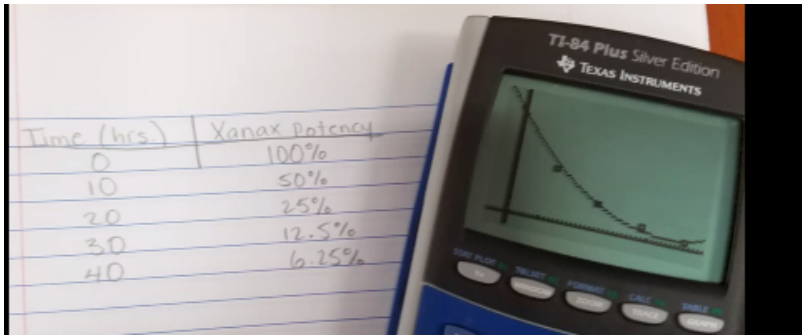
$$y = ax^2 + bx + c$$

$$a = 4.73$$

$$b = -646.61$$

$$c = 22233.47$$





The image shows a TI-84 Plus Silver Edition calculator on the left and a tablet on the right. The tablet screen displays handwritten data and an equation.

Data

Revenue	Revenue
Order 2	\$ 3.00
Months 2	\$ 7.96
Order 3	\$ 14.92
Months 5	\$ 5.00
Frappé 1	\$ 2.99

Equation

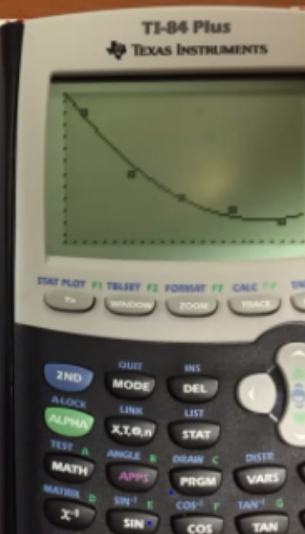
$$y = -1.944...x^2 + 12.809... - 9.792...$$

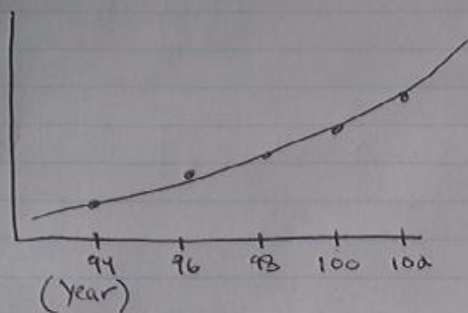
Price	Sold
80	3
75	4
70	5
65	7
60	12

$$y = .0257 \cdot x^2$$

~~$$y = .028 \cdot x^2$$~~

$$y = .0257 \dots x^2 - 4.02x + 160.314 \dots$$



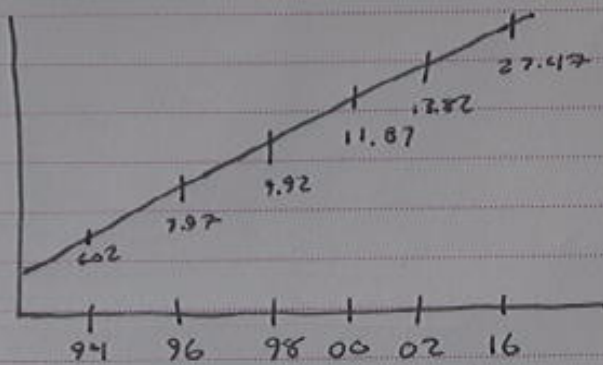


~~Using the quadratic regression model we~~
 Using the quadratic regression model we predicted that in the year 2016 there will be approximately 57 cases of autism per 1,000 children

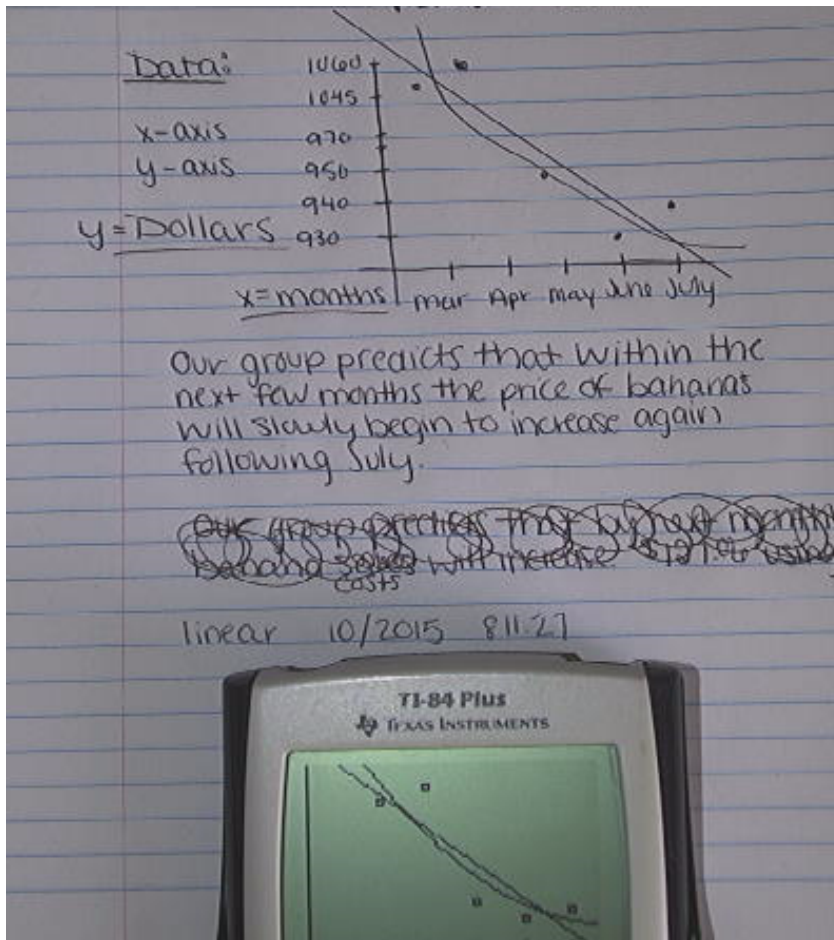
TEXAS INSTRUMENTS TI-83 Plus

X	Y1
117	57.327
	64.854

With the information provided using a linear regression there will be 27.47 cases per 1000 children reported in 2016.

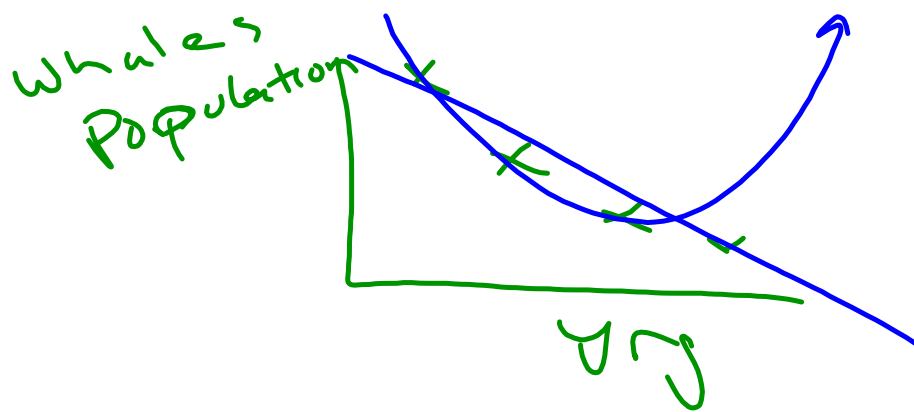


in 2016 using linear regression there will be 27.4 cases per 1000 children in us.



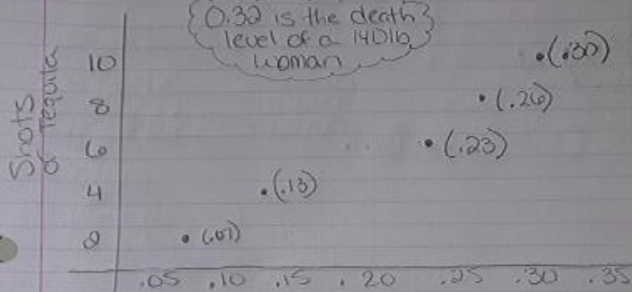
X	Y1	Y2
FO	811.27	953.67
11	776.75	987.26

According to the quadratic regression, Bananas will cost \$953.67 per ton



* How many shots of Tequila can a 140 lb woman do in an hour before she passes out or dies?

0.30 is the death level of a 140 lb woman



B.A.C. levels

Quadratic Regression - If a 140 lb woman took 12 shots of Tequila in an hour she would reach the level of passing out or dying.

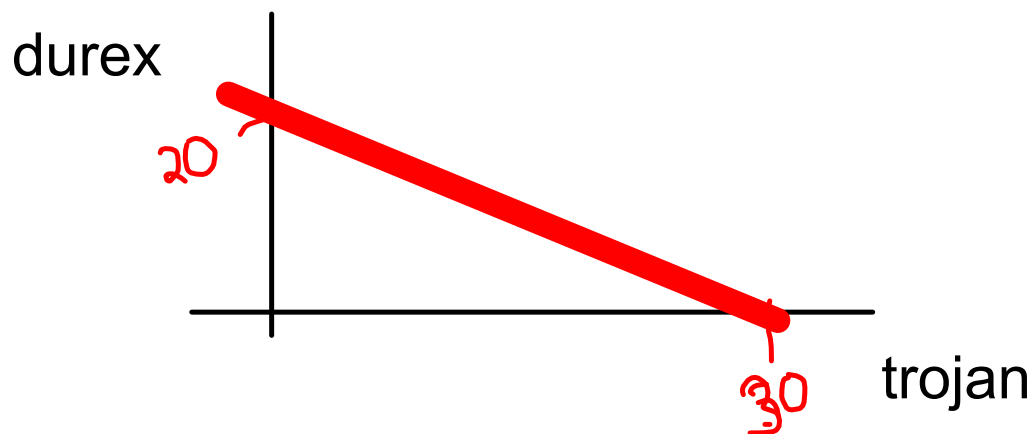
Linear Regression - If a 140 lb woman took 14 shots of Tequila in an hour she would reach the BAC level of passing out or dying.

NORMAL FLOAT AUTO REAL RADIAN MP
PRESS + FOR Δ Tb1

X	Y ₁	Y ₂		
4	14686	139		
5	18225	1685		
6	21371	198		
7	24125	2275		
8	26486	257		
9	28454	2865		
10	30029	316		
11	31211	3455		
12	32	375		
13	32396	4045		
14	324	434		

Y=1.4

Evaluate



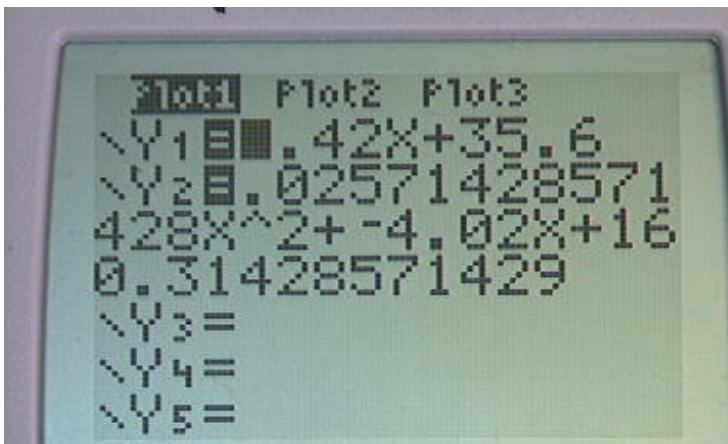
when using NO trojans ($x=0$)

then used 20 Durex

when using NO durex ($y=0$)

then used 30 trojen

Which is right?



Liner v Quad

