GO CUBS

Happy Thursday, Nov 3!

Do Now:

The population of Chicago is 2719000 and increasing by 10% each year (because of the popularity of the cubs). Write a model of the population.

$Y = 2719000(1.1)^x$

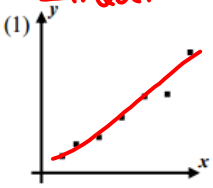
$(1.1)^x$

Oct 19-2:43 PM

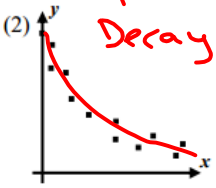
LT6-Regression

Which graph would be a best fit for logarithm, exponential and linear?

(1) Linear

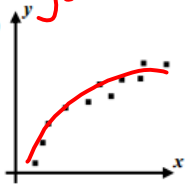


(2) Exp Decay



(3) Exp Growth

(4) Logarithmic



Regression: the relation between selected values of x and observed values of y, from which the most probable value of y can be predicted for any value of x.

Logarithmic regression models occur when a phenomenon grows very quickly at the start.

TI-84/83 use natural logs and Nspire use common logs ln reg

Exponential regression models occur when an phenomeon accelerates over time.

logistic

$y = 6 \ln x$

$y = 10 \log x$

Oct 30-2:51 PM

(TI-83, TI-83 Plus, or TI-84 Plus)

STEP 1: Entering in the data into two lists (L_1 and L_2)

- Hit STAT
- Choose **1:Edit** by either hitting 1 or ENTER.
  If necessary, clear out any old data in the lists:
  Use ▲ to get cursor to cover L1 at top of list; press CLEAR ENTER. Repeat process for L2.
- Type the data values for the independent (x) variable in column L1. Hit ENTER after each entry.
- When you finished entering data in L1, hit ▶ and then enter the data values for the dependent (y) variable in column L2.

STEP 2: Making the scatterplot

- Hit 2nd [Y=] [STAT PLOT]
- Choose **1: Plot1** by either hitting 1 or ENTER.
- Turn **On** the plot by pressing ENTER.

STEP 3: Find the equation

- STAT
- CALC
- Choose the type of regression
- ENTER

To graph:

- Menu, Analazye, Regre.

Ti-Nspire CX

To enter data

- Menu, add Lists and Spreadsheets
- Label Columns x and y,
- Enter Data: x values, y values

To create a scatter plot:

- Press CTRL, DOC to add a page
- Choose Add Graph
- Menu, Graph Type, Scatter Plot
- VAR choose x, VAR choose y
- ENTER

To find the equation:

- Menu, Statistics,Stat Calculations
- Choose the type of regression
- Enter Xlist: x Ylist: y
- Ok

Nov 4-7:48 AM

The table shows the amount of medicine for treating a disease in the bloodstream over the 9 hours following a dose of 10 mg. It seems that the rate of decrease of the drug is approximately proportional to the amount remaining.

Time (hrs)	Drug Amount (mg)
0	10
1	8.3
2	7.2
3	6.0
4	5.0
5	4.4
6	3.7
7	2.8
8	2.5

>1.7

>5

Which regression would make the most sense? Why?

Exp. decay

Find the regression equation.

$y=ab^x$ $y=10.08(0.84)^x$

How much of the drug will be in your blood stream after 12 minutes?

$\frac{12}{60}=.2$hrs $x=.2$ $y=$

How long will it be until the amount of drug in your blood stream is at 0.5 mg?

$0.5=10.08(0.84)^x$

The Correlation Coefficient is an indication of how well a model fits a particular set of data.

The correlation coefficient is designated by r and falls into the range $-1 \le r \le 1$. If r is close to 1 (or -1), the model is considered a "good fit". If r is close to 0, the model is "not a good fit".

$Y=$ _____

Nov 4-7:50 AM

The population of Jamestown has been recorded for selected years since 2000.

2 4 5 7 9

Year	2002	2004	2005	2007	2009
Population	5564	6121	6300	6812	7422

Change window ~600

Which regression would make the most sense? Why?

linear

Find the regression equation.

$y = 260.66x + 5036.21$

What will the population be in the year 2016?

$t = 16$

In what year will the population be 9851?

Oct 30-2:48 PM

A corn plant will grow rapidly after it first emerges from the soil and then eventually slows its growth rate.

Days	8	14	22	40	48	54
Height(in)	4	18	48	60	71	73

Which regression would make the most sense? Why?

ln , logarithmic

Find the regression equation.

What will be the height after 80 days?

How many days will it be to reach 85 inches?

Oct 30-2:51 PM

Homework:

Regression Worksheet

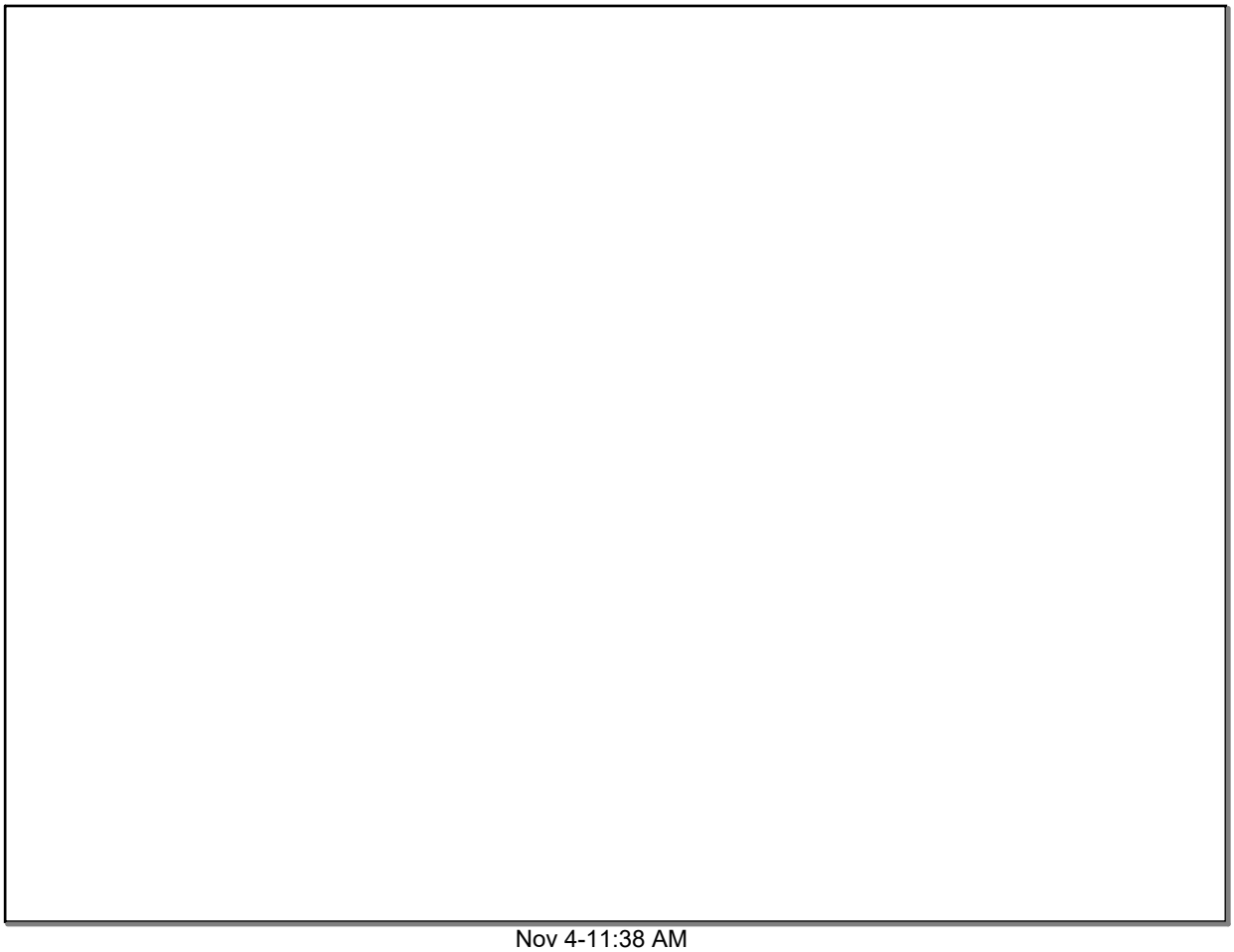
Quiz Monday

Exit Ticket: What type of regression should you use for:

x	y
0	3
1	6
2	12
3	30
4	48
5	63

Nov 4-11:38 AM

Nov 4-10:27 AM



Nov 4-11:38 AM