Rules for Derivatives

$$\frac{d}{dx}(f+g) = \frac{d}{dx}f + \frac{d}{dx}g$$

$$\frac{d}{dx}af = a\frac{d}{dx}f$$

↖ constant

Ex $$\frac{d}{dx}5x-7 = \frac{d}{dx}5x - \frac{d}{dx}7$$

$$= 5\frac{d}{dx}x - 0$$

$$= 5\cdot 1 - 0 = 5$$

Power Rule

$$\frac{d}{dx}x^n = n\cdot x^{n-1}$$

$$\frac{d}{dx}x^8 = 8\cdot x^{8-1}$$

$$= 8x^7$$

Ex $\frac{d}{dt}(t^7 + 2t - 8)$

$= 7t^6 + 2$

Power Rule

Ex $\frac{d}{d\theta}\, 3\theta^2 - 5\theta^5 + \frac{4}{\theta^2}$

$6\theta^1 - 25\theta^4 + \frac{d}{d\theta}\, 4\theta^{-2}$

$6\theta - 25\theta^4 - 8\theta^{-3}$

Ex $\frac{d}{dx}\left(\frac{\sqrt{x} + 4x^2}{\sqrt[3]{x}}\right)$

$\frac{x^{1/2}}{x^{1/3}} + \frac{4x^2}{x^{1/3}}$

$x^{1/2 - 1/3} + 4x^{2 - 1/3}$

$$\frac{d}{dx}\left(x^{1/6} + 4x^{1\frac{2}{3}}\right)$$

$$= \frac{1}{6}x^{1/6-1} + 4\cdot\frac{5}{3}x^{1\frac{2}{3}-1}$$

$$= \frac{1}{6}x^{-5/6} + \frac{20}{3}x^{2/3}$$

derivate of exponentials

$$\frac{d}{dx}e^x = e^x$$

$$\frac{d}{dx}a^x = a^x \cdot \ln a$$

$$\frac{d}{dx} a * b^\wedge x = a * b^\wedge x \ln b$$

a *(b ^ x) ln b

a + b × c

(1 + 2) × 3

$$P = 6e^{RT}$$

e ^ (R×T)

cenurate of Ln / Logs

$$\frac{d}{dx} \ln x = \frac{1}{x}$$

$$\frac{d}{dx} \log_b x = \frac{1}{x \ln b}$$

$$\frac{d}{dx} \log x = \frac{1}{x \ln 10}$$

$$\frac{d}{dx} a + b \ln x$$

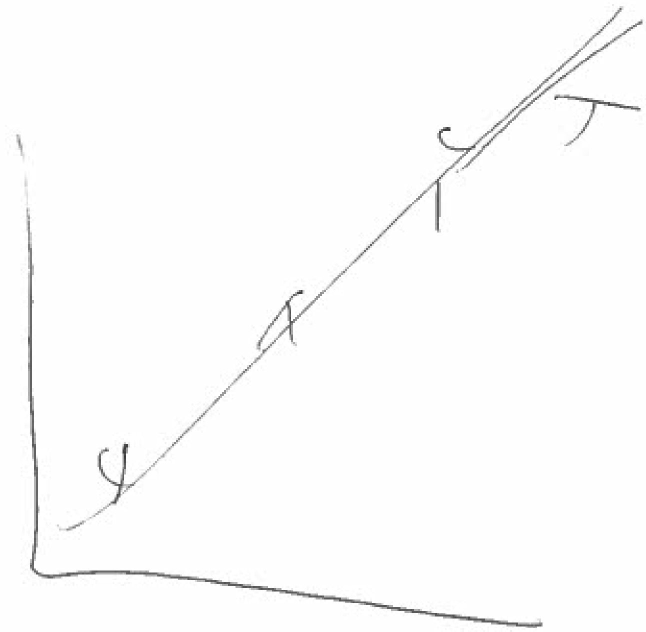
$$0 + b \cdot \frac{d}{dx} \ln x$$

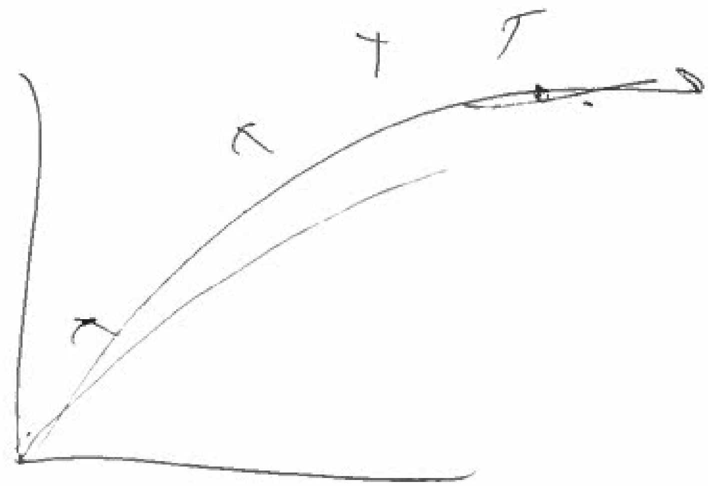
$$+ b \, 1/x$$

$$= \frac{b}{x}$$

$$\frac{d}{dx} a * x^b$$

$$a * b x^{b-1}$$





GROUP NAME: WHO	Student Names (First and Last)
Date: 2/11	Speaker/Presenter: Jenna
Independant Variable (x-axis): Time	Writer/Prep: Kathleen
Dependant Variable (y-axis): Steroid lvl in food in Babies (in ppm)	Leader/Collaborator: Cathryn

Conclusion (in words):
Based on our exponential regression, the steroid level in food in babies is increasing by 9 282 ppm so, the babies chance of dying is rapidly increasing and WE MUST STOP IT!

Supporting Work:

Time	Steroid Lvl in Food in Babies
0.01	122ppm
0 3	100ppm
0 6	143ppm
0 9	200ppm
12	170ppm

Exp Reg

$y = a * b \wedge x$

$a = 108\ 8412001$

$b = 1\ 046261367$

$r^2 = 0.6226838254$

$r = 0.7891031779$

$\therefore \frac{dy}{dx} = \frac{d}{dx}\ 108.841 * 1046^x$

$= 108\ 841\ \ 1046^x \ln 1046$

PWR Reg

$y = a * x \wedge b$

$a = 139.1463296$

$b = .0433119988$

$r^2 = .2212704032$

$r = .4703938809$

ln Reg

$y = a + b \ln x$

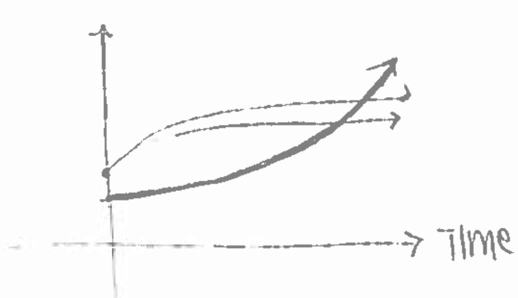
$a = 143.0862807$

$b = 6.7914676182$

$r^2 = .2450444349$

$r = .4950196305$

Steroid lvl



AT 2014

Rate of change = 9282

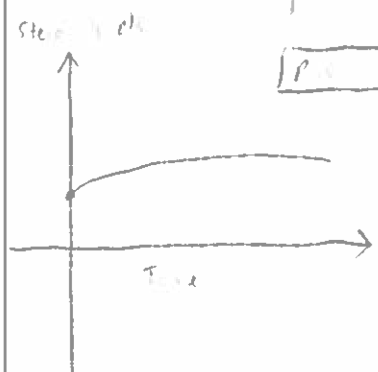
GROUP NAME: W[illegible] Organization (W[illegible])	Student Names (First and Last)
Date: 2/11/14	Speaker/Presenter: Michael Velick
Independant Variable (x-axis): Time	Writer/Prep: Charles
Dependant Variable (y-axis): Steroid levels in [illegible]	Leader/Collaborator: Cathryn [illegible]

Conclusion (in words):

At 2014 the steroid levels [illegible] 0.48261 ppm per [illegible]. This [illegible] to a power regression. At this rate [illegible] it will take decades to [illegible] before a [illegible] significant [illegible]/increase will [illegible].

Supporting Work:

Time	Steroid Levels in Food for B[illegible]
00	120 ppm
03	100 ppm
06	143 ppm
09	200 ppm
12	[illegible] ppm



At 2014 the [illegible] change is 0.4 [illegible].

Exp Re

$y = a * b^x$

a = 105.84[illegible]

b = 1.04[illegible]76151[illegible]

r^2 = 0.6[illegible]683[illegible]

r = 0.[illegible]591031779

Power Reg

$y = a * x^b$

a = 1[illegible]

b = 0.04[illegible]

r^2 = 0.[illegible]

r = 0.47031[illegible]

ln Re

$y = a + b \ln x$

a = 14[illegible].086[illegible]

b = 6.514[illegible]761[illegible]

r^2 = 0.[illegible]504[illegible]34[illegible]

r = 0.[illegible]

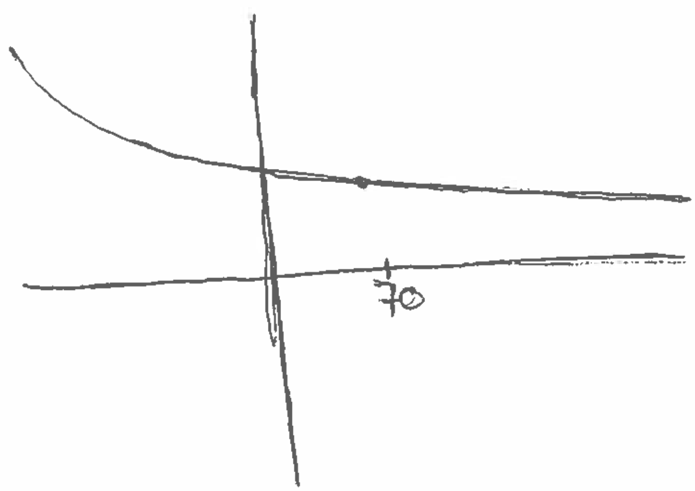
GROUP NAME: Anti Fluffy Po... Date: 2/11/14	Student Names (First and Last)
Independant Variable (x-axis): Income	Speaker/Presenter: Ahmed
Dependant Variable (y-axis): Crime Rate	Writer/Prep: June
	Leader/Collaborator: Tyler

Conclusion (in words):

At 70 thou. the crime rate is decreasing, ~~but not by that much!!~~ by ≈ .08% per $1000/year ~~.808 %~~

Supporting Work:

Exponential Reg.



dy/dx = -.8.077E -4

@ a • b^x ln b

y = .9399189987 • -.3323337022^x * -.3323337022^x ln(-.3323...)

GROUP NAME: Fluffy Ponies

Date: 2/11/14

Independant Variable (x-axis): income

Dependant Variable (y-axis): crime rate.

Student Names (First and Last)

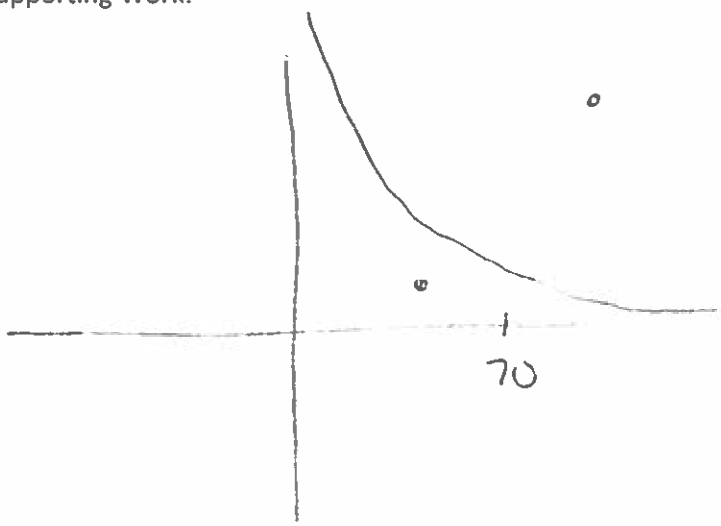
Speaker/Presenter: Milton

Writer/Prep: Courtney

Leader/Collaborator: Tyler

Conclusion (in words):
According to the ln regression, at an income of 70K the crime rate is decreasing by −.14% per thousand dollars per year.

Supporting Work:



~~$y_1 = 3.080187773755593 \times .996701158317397^x$~~

~~ln(.996701158317397)~~

$y_1 = .6825477761446 7 + -.1013216314536 3 \ln(x)$

↑ original regression

~~[illegible]~~

$y' = \frac{-.1013216314536 3}{x}$ ← $\frac{d}{dx}$

70K = −.0014...

GROUP NAME:	Student Names (First and Last)
Date: 2/11	Speaker/Presenter: Jason
Independant Variable (x-axis): Years	Writer/Prep: Dallen
Dependant Variable (y-axis): International rates	Leader/Collaborator: Daniella

Conclusion (in words):
In 2014 The rate of grown is $51.12 per year. against

Supporting Work:

exp

$$y=2818.288671\cdot 1.01486^{\wedge}x$$

$$\frac{d}{dx}=2818.2886707608\cdot 1.0148627648616^{\wedge}x\,Ln(1.0148627648616)$$

Ln

$$y=1924.589905+581.3077419\cdot Ln\,x$$

$$\frac{d}{dx}=\frac{581.30774190437}{x}$$

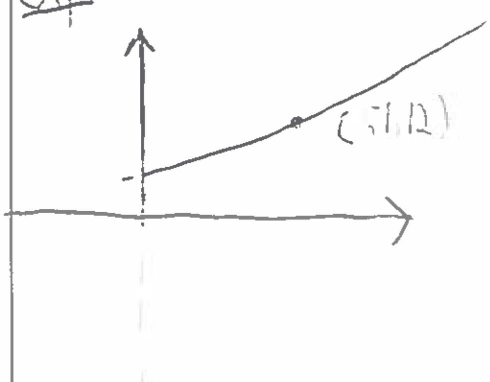
power

$$y=2199.062665\cdot x^{\wedge}.1715739302$$

$$\frac{d}{dx}=2199.0626647609\cdot .17157393022435x^{\wedge}(.17157393022435-1)$$

exp

[illegible]



GROUP NAME: Porter's Minions Date: Feb 11, 2014	Student Names (First and Last) Speaker/Presenter: Kevo Writer/Prep: Jenn Leader/Collaborator: Daniella
Independant Variable (x-axis): years Dependant Variable (y-axis): amount international student pay	

Conclusion (in words): Pro

According to the ln regression shows that in 2014 international students would pay $41.52 less.

Supporting Work:

exponential reg

$a * b^x$

$a * b \wedge x \ln b$

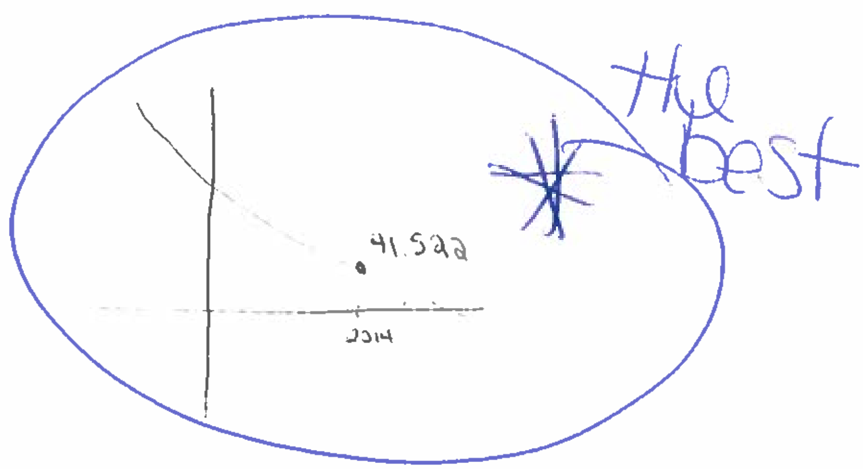
$y_1 = 2818.288\ldots * 1.014\ldots \wedge x \ln(1.014\ldots)$

ln reg

$\frac{b}{x}$

b/x

$y_2 = 581.307\ldots / x$



pwr reg.

$a * bx \wedge (b-1)$

$y_3 = 2199.062\ldots x \wedge (.171. -1) * .171\ldots$