Jahiya Clark

Prof. Nelson

Lab 5

10/17/2021

**1.**

exp\_fun = function(x, a, b)

{

return(a \* exp(-b \* x))

}

curve(

exp\_fun(x, 0.3, (1/15)), add = FALSE, from = 0, to = 50,

ann = FALSE, axes = TRUE, ylab = "f(x)"); box()

2.

Chart, histogram

Description automatically generated

3.

When the parameter “a” changes, the starting point of the exponential curve changes.

4.

When the parameter “b” changes the depth/exaggeration of the curve changes. As “b” increases the depth of the curve deepens.

5.

Chart, histogram

Description automatically generated

6.

The parameter “a” decides the initial slope of the line, and thus, when “a” changes the slope changes.

7.

When the parameter “b” changes the peak of the line changes.

8.

I used locator(1) to choose my x (797) and y (0.187) coordinate, then for slope (-0.000596) I used locator(1) twice to pick two points I want the line to go through and used a rise over run formula.

9. Chart, scatter chart

Description automatically generated

10.

Parameter “a” is 0.97 and “b” is (1/405), after working and hypothesizing, these parameters allow the curve to fit the data as close as possible.

11.

Chart, scatter chart

Description automatically generated

12.

Parameter “a” is 0.0087 and “b” is (1/245), also through hypothesizing because I know what the parameters can change.

13.

Chart, scatter chart

Description automatically generated

14.

locator(15)

dat\_disp$resids\_ricker <- c(00.59611652, 0.69225830, 0.77321980, 0.75297943, 0.69225830,

0.61129680, 0.48479446, 0.39371277, 0.30263109, 0.19636912,

0.13058790, 0.09010715, 0.05468649, 0.03950621, 0.02432593)

dat\_disp$resids\_linear <- c( 0.672, 0.646, 0.606, 0.550, 0.489, 0.454, 0.393, 0.332,

0.241, 0.196, 0.150, 0.0850,

0.0496, 0.00408, 0.00331)

dat\_disp$resids\_exp <- c(0.78333999, 0.71249868, 0.63659727, 0.55563577, 0.43419352,

0.31781137, 0.22672968, 0.16600856, 0.13564799, 0.10022734,

0.06986678, 0.05468649, 0.03950621, 0.03444612, 0.021432)

resid\_linear <- c(dat\_disp$disp.rate.ftb - dat\_disp$resids\_linear)

resid\_exp <- c(dat\_disp$disp.rate.ftb - dat\_disp$resids\_exp)

resid\_ricker <- c(dat\_disp$disp.rate.ftb - dat\_disp$resids\_ricker)

par(mfrow = c(3, 1))

hist(resid\_linear, main = "Histogram of Linear Resids", xlab = "", col = "light green", xlim = c(-0.5, 0.5))

hist(resid\_exp, main = "Histogram of Exponential Resids", xlab = "", col = "sky blue", xlim = c(-0.5, 0.5))

hist(resid\_ricker, main = "Histogram of Ricker Resids", xlab = "", col = "lavender", xlim = c(-0.7, 0.3))

15.

Chart

Description automatically generated