

3. Create a model for the data using linear, quadratic, power, exponential, and logarithmic regression of this data. List the equations you obtain for each (*include all decimal places*) and the coefficient of determination (*6 decimal places*). For each type of regression, create a new page with the scatter plot and graph of the regression function.

Linear Regression _____ $r^2 =$ _____

Quadratic Regression _____ $R^2 =$ _____

Power Regression _____ $r^2 =$ _____

Exponential Regression _____ $r^2 =$ _____

Logarithmic Regression _____ $r^2 =$ _____

4. (a) Which model fits the data best based on the coefficient of determination (r^2)?

(b) Which model has the best balance of points above & below the regression line/curve?

(c) Zoom out. Which model predicts the future best?

(d) Considering the information gained in a-c, which model do you believe is the best to use? Provide **two** reasons to support your decision.

- Print **ALL** of your scatter plots with each individual regression model on the **SAME** page. (Follow the instructions below.) Place the function that you have selected as best at the top left. Get a cable off the plexiglass screen on Mrs. Meyer's desk. Connect the cable to your calculator and to your laptop.
- On your calculator, go to the page with the BEST regression model. If you have Zoomed out, select Zoom-Data to return it to normal view. Move the pointer off the screen.
- Go to the website: nspireconnect.ti.com
- Select Connect Handheld.
- Capture the image.
- When it appears on screen, select the Copy button.
- Open a blank Word document and paste the image.
- Text wrap the image (Right Click—Text Wrap—Tight) and drag it to the top left corner.
- Repeat until all 5 images are captured.
- Separate them on the page with your best model in the top left corner.
- Print the document and staple it to this packet.
- Return the cable with the USB-C dongle to Mrs. Meyer's desk.

5. Make **two** predictions using your model. One prediction should estimate a value on your x-axis while the other prediction should estimate a value on your y-axis. State your prediction as a question. Find the answer to the question and then THOROUGHLY explain how you reached that conclusion by using your calculator.

Examples: What will the birth rate (per 1000 women) be for U.S. teens in 2030?

In what year will the U.S. teen birth rate drop to 6.5 per 1000 women?

Prediction 1: _____

Solution: _____

Write a list of steps for how you found the solution using the proper functions on your calculator! Subbing numbers into the equation and solving by hand is NOT acceptable. Be sure to indicate the name of each menu choice. Do NOT write "Pressed Menu-4-6." Do write "Pressed Menu—4: Analyze—6: Intersection."

Prediction 2: _____

Solution: _____

Write a list of steps for how you found the solution using the proper functions on your calculator! Subbing numbers into the equation and solving by hand is NOT acceptable. Be sure to indicate the name of each menu choice. Do NOT write "Pressed Menu-4-6." Do write "Pressed Menu—4: Analyze—6: Intersection."