1. Given the regression equation: $\hat{y}=3x-1$, finish the table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$x$$ | $$y$$ | $$\hat{y}$$ | $$y-\hat{y}$$ | $$\left(y-\hat{y}\right)^{2}$$ |
| 1 | 7 |  |  |  |
| 2 | 5 |  |  |  |
| 3 | 12 |  |  |  |
| 4 | 3 |  |  |  |
|  |  |  | SSres =  |

*Dog’s Weight Problem (2-5)*: As dogs of a particular breed grow, their weight is a function of their length. Suppose that these lengths and weights have been measured.

 *x* (in.) *y* (lb)
 6 2
 12 14
 24 98
 29 170
 34 260
 37 330

 2. What pattern do the first three data points follow? What type of function has this pattern?

 3. Find the particular equation for the function in Problem 2 algebraically by substituting the second and third points into the general equation. Show that the equation gives values for the last point close to the value in the table.

 4. Use the appropriate kind of regression to find the function of the type in Problem 2 that best fits all six data points. Write the correlation coefficient, and explain how it indicates that the function fits the data quite well.

 5. Use the regression equation from Problem 4 to predict the weight of a newborn puppy 4 inches long. Which do you use, interpolation or extrapolation, to find this? How can you decide?