a. Using a KNN with N=1 on our point X=3, our model would find the nearest neighbor, X=2, and predict y3 to be equal to y(x=2). This would result in a prediction of 2 from the KNN.
b. Using a linear regression model, our model would see the points [1,1], and [2,2] and learn that the appropriate weights are [0,1] for this particular dataset. It would then predict that y3=0+x3 which will result in a prediction of 100 for y3.
c. The inductive bias of the KNN model is that the y value for a given data point is likely similar to the y value of the closest data point. This assumption is probably not a very good one here, as x3 is very far from x2 and y2 may not give a very good indication of y3. The inductive bias of the linear regression model is that the x and y data follow some linear relationship between y and x (y=ax+b). This assumption may be more appropriate for this situation, as the data we have do appear to follow a straight line (obviously new data could render this untrue).