Linear HW: Due 2/20/24

Download dataset http://www.cse.sc.edu/~rose/587/CSV/co2.csv This data set is comprised of monthly measurements of CO2 at the Mauna Loa Observatory.

Explore the columns **DecimalDate** and **interpolated**. These are columns which contain real numbers:

   a. Plot the column labelled '**interpolated**' (Y) against the column labelled '**DecimalDate**' (X). **Save the plot to a pdf file. Be sure to label your plot appropriately.**
   b. Try fitting these two columns with a linear model lm(). Hint: You might want to review the linear regression lab.
   c. As in the linear regression lab, visualize the model (diagnostic plots) with the commands, where **m** is the variable you used to hold the model:

```
par(mfrow=c(2,2))
plot(m)
```
   Save this plot to a pdf file.

   d. **Explain the top left figure from part c.** What does this tell us about the fit of our model?
   e. Visualize the predicted and observed y values similar to what we did in slide 6 of the linear regression lab. **Save this graph to a pdf file.**
   f. Do you think that the values in the **interpolated** column appear to be *i.i.d.* (independent and identically distributed)? Hint: look at the last two years of data (plot the last 24 data points. **Save this plot to a pdf file.**)
   Explain whether this data appears to be *i.i.d.* **Justify your answer.**

Be sure to label your graphs/plots. Also be sure to submit your R code as a .R or .txt file