Linear and Logistic Regression

implement simple linear regression and logistic regression usiung R

take to data poinys and implement also plot

Here's a **complete and simple example** showing how to implement **Linear Regression** and **Logistic Regression** in **R** using two small datasets — along with plots.

🔹 1. Simple Linear Regression in R

Example: Predict `y` from `x`

```
r


# Simple Linear Regression Example

# Create sample data
x <- c(1, 2, 3, 4, 5)
y <- c(2, 4, 5, 4, 5)

# Fit linear regression model
model <- lm(y ~ x)

# Show summary
summary(model)

# Predict for a new value
new_data <- data.frame(x = 6)
pred <- predict(model, new_data)
print(pred)

# Plot data points and regression line
plot(x, y, col = "blue", pch = 19, main = "Simple Linear Regression", xlab = "X", ylab = "Y")
abline(model, col = "red", lwd = 2)
```

✅ **Output:**

- Regression line is drawn in red.
- Blue points are actual data.
- Prediction for `x = 6` will be displayed in the console.

🔹 2. Logistic Regression in R

Example: Predict whether `y` = 1 or 0 based on `x`

```
r


# Logistic Regression Example
```

```r
# Create sample data
x <- c(1, 2, 3, 4, 5)
y <- c(0, 0, 0, 1, 1)  # Binary target

# Combine into data frame
data <- data.frame(x, y)

# Fit logistic regression model
log_model <- glm(y ~ x, data = data, family = binomial)

# Show summary
summary(log_model)

# Predict probabilities
prob <- predict(log_model, newdata = data, type = "response")
print(prob)

# Plot data points and logistic curve
plot(data$x, data$y, col = "blue", pch = 19, main = "Logistic Regression", xlab = "X", ylab = "Y
(Probability)")
curve(predict(log_model, data.frame(x = x), type = "response"), add = TRUE, col = "red", lwd =
2)
```

✅ **Output:**

- Blue points are the actual 0/1 data points.
- Red curve is the logistic regression probability curve.

Would you like me to make both plots appear **side by side** in one window for easy comparison?