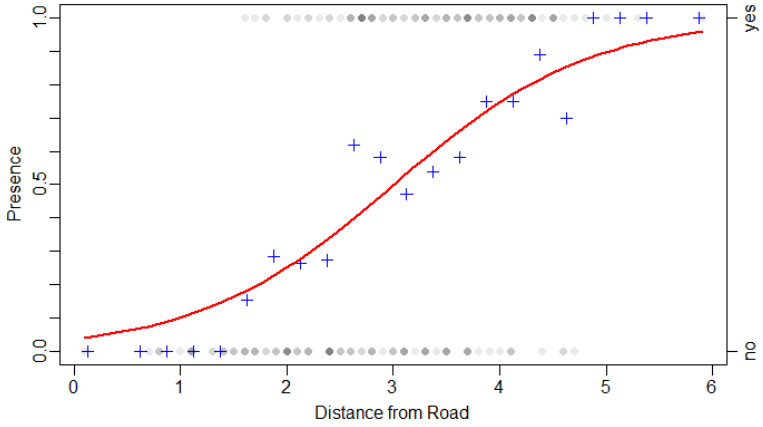
A graduate student examined the question of whether roads had an impact on the density of Moose (*Alces alces*). As an initial investigation of this question, the graduate student created a large number of "plots" that were up to 6 miles from the nearest road. For each plot, the student recorded evidence for the presence of Moose (e.g., tracks, droppings) and the straight-line distance from the nearest paved road (determined via GIS analysis). The data are read and analyzed with the R code below. Use these results to answer the following questions.

a. Interpret the slope.
b. Interpret the back-transformed slope.
c. Predict the log odds for the presence of Moose in a "plot" that is 3 miles from a road.
d. Predict the odds for the presence of Moose in a "plot" that is 3 miles from a road. Specifically interpret this result.
e. Predict the probability of the presence of Moose in a "plot" that is 3 miles from a road.
f. Compute the distance from a road at which 50% of all plots would show a presence of Moose.
g. Compute the distance from a road at which 20% of all plots would show a presence of Moose.
h. How much do you expect the odds to change if the distance from a road changes from X to X+4 miles? Provide evidence that does NOT include computing the odds at two specific distances.

```
> df <- read.csv("NewData.csv")
> str(df)
      'data.frame':     200 obs. of  2 variables:
       $ presence: Factor w/ 2 levels "no","yes": 1 1 1 1 2 1 2 1 1 1 ...
       $ distance: num  3.1 2.2 3.7 3.1 3.5 3.1 4.3 1.1 0.8 2 ...

> glm1 <- glm(presence~distance,data=df,family=binomial)
> fitPlot(glm1,breaks=seq(0,7,0.25),xlab="Distance from Road",ylab="Presence")
```




```
> summary(glm1)
      Coefficients:
                  Estimate Std. Error z value Pr(>|z|)
      (Intercept)  -3.2656     0.5693  -5.736 9.71e-09 ***
      distance      1.0874     0.1830   5.942 2.81e-09 ***
      ---
       (Dispersion parameter for binomial family taken to be 1)
          Null deviance: 277.18  on 199  degrees of freedom
      Residual deviance: 230.08  on 198  degrees of freedom
      AIC: 234.08
      Number of Fisher Scoring iterations: 3
```