Homework on modelr

1. p. 354(23.2.1) # 2

One way to make linear models more robust is to use a different distance measure. For example, instead of root-mean-squared distance, you could use mean-absolute distance:

measure\_distance <- function(mod, data) {

diff <- data$y - **make\_prediction**(mod, data)

**mean**(**abs**(diff))

}

Use optim() to fit this model to the simulated data above and compare it to the linear model.

1. p. 358 (23.3.3) #1

Instead of using lm() to fit a straight line, you can use loess() to fit a smooth curve. Repeat the process of model fitting, grid generation, predictions, and visualisation on sim1 using loess()instead of lm(). How does the result compare to geom\_smooth()?

Transformation problem

sim5 <- tibble(

x = seq(0, 3.5 \* pi, length = 150),

y = 4 \* sin(x) + rnorm(length(x))

)

1. Use a transformation y = a\_0 + a\_1 sin(x) + a\_2\*x to model the data and compare it to a natural spline of degree 5. Show the plot of the data with the predicted values. Also graph the residuals. Which do you think is better and why?