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library(ggplot2)
library(ggpmisc)

# generate artificial data
set.seed(4321)
x <- 1:100
y <- (x + x^2 + x^3) + rnorm(length(x), mean = 0, sd = mean(x^3) / 4)
my.data <- data.frame(x,
                      y,
                      group = c("A", "B"),
                      y2 = y * c(0.5, 2),
                      block = c("a", "a", "b", "b"))

str(my.data)

## 'data.frame': 100 obs. of  5 variables:
## $ x      : int  1 2 3 4 5 6 7 8 9 10 ...
## $ y      : num -27205 -14243 45791 53731 -8029 ...
## $ group: Factor w/ 2 levels "A","B": 1 2 1 2 1 2 1 2 1 2 ...
## $ y2     : num -13603 -28485 22895 107463 -4014 ...
## $ block: Factor w/ 2 levels "a","b": 1 1 2 2 1 1 2 2 1 1 ...

# plot
ggplot(data = my.data, mapping=aes(x = x, y = y2, colour = group)) +
  geom_point() +
  geom_smooth(method = "lm", se = FALSE,
             formula = y ~ poly(x=x, degree = 2, raw = TRUE)) +
  stat_poly_eq(
    mapping = aes(label = paste("$", ..eq.label.., "$\\ \\ \\ \\ $",
                               ..rr.label.., "$", sep = ""))
    , geom = "text"
    , formula = y ~ poly(x, 2, raw = TRUE)
    , eq.with.lhs = "\\hat{Y} = "
    , output.type = "LaTeX"
  ) +
  theme_bw()

## [1] "\\hat{Y} = 13900 - 2230 x + 67.5 x^2"
## [1] "\\hat{Y} = 169000 - 14400 x + 327 x^2"

```

