Final exam

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```r
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```r
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 4.3.2
```

1 Treatment effects

a) No treatment effect

```r
set.seed(100)

df_a <- data.frame(
  x = runif(100, 0, 10),
  y = 5 + rnorm(100, 0, 1),
  group = rep(c("control", "treatment"), each = 50)
)


ggplot(df_a, aes(x = x, y = y )) +
  geom_point(aes(shape = group),  size = 3) +
  scale_shape_manual(values = c(16, 1)) +
  geom_smooth(aes(color = group), method = "lm", se= FALSE) +
  theme_minimal()
```

```
## `geom_smooth()` using formula = 'y ~ x'
```