Figure 9-3

September 11, 2020

```r
[ ]: # install the following packages
     install.packages("ggplot2")
     install.packages("dplyr")
     install.packages("tidyverse")
```

```r
[7]: ##-------------------------------Block 1-------------------------------

     #### Figure 9.3 ####

     library("ggplot2")
     library("dplyr")
     library("tidyverse")
     set.seed(2)
     N <- 5E02
     X = rnorm(N, 3, 5)
     Y = - 1 + 0.5 * X + rnorm(N, 0, 1)
     z <- data.frame(X = X, Y = Y)
     z <- mutate(z,
                 neg = factor(Y < 0, labels = c("yes", "no")),
                 Yc = ifelse(Y > 0 , Y, 0),
                 Yt = ifelse(Y > 0, Y, NA))
     z2 <- gather(z, key, value, -X, - neg)
     ys <- c("Y" = "Whole sample", "Yc" = "Censored sample", "Yt" = "Truncated␣
      ↪sample")
     gp <- ggplot(z2, aes(X, value)) + geom_point(size = 0.4, aes(colour = neg)) +
         geom_abline(intercept = -1, slope = 0.5) +
         geom_smooth(method = "lm", se = FALSE, lty = "dotted") +
         facet_wrap(~ key, ncol = 3, labeller = labeller(key = ys)) +
         guides(colour = FALSE)  + xlab("") + ylab("") +
         theme(legend.text = element_text(size = 6),
               legend.title= element_text(size = 8),
               axis.title = element_text(size = 8))
     gp
```

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