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BI 471

6)

```
day<- c(1,2,3,4,5)

N<-c(100,158,315,398,794)

plot(day, log(N))

lm(day ~ log(N))

abline(-7.907, 1.942)

abline(lm(log(N) ~ day))
```

7)

```
install.packages('deSolve')

library(deSolve)

ecology <- function(t, y, p) {

  N <- y[1]

  with(as.list(p), {

    dN.dt <- r * N

    return(list(dN.dt))

  })

}

t <- 1:100

y0 <- c('N' = 1)

p <- c('r' = 0.25)

p2 <- c('r' = 0.5)

p3 <- c('r' = 1)


sim1 <- ode(y = y0, times = t, func = ecology, parms = p, method = 'lsoda')

sim2 <- ode(y = y0, times = t, func = ecology, parms = p2, method = 'lsoda')

sim3 <- ode(y = y0, times = t, func = ecology, parms = p3, method = 'lsoda')
```

```
head(sim1)

class(sim1)

sim1.frame <- as.data.frame(sim1)

names(sim1.frame)

names(sim1.frame) <- c('t', 'abundance')

sim1.frame$t

sim1.frame$abundance


head(sim2)

class(sim2)

sim2.frame <- as.data.frame(sim2)

names(sim2.frame)

names(sim2.frame) <- c('t', 'abundance')

sim2.frame$t

sim2.frame$abundance


head(sim3)

class(sim3)

sim3.frame <- as.data.frame(sim3)

names(sim3.frame)

names(sim3.frame) <- c('t', 'abundance')

sim3.frame$t

sim3.frame$abundance


plot(abundance ~ t, data = sim1.frame, type = 'l', lwd = 3, col = 'purple', bty = 'l')

lines(abundance ~ t, data = sim2.frame, type = 'l', lwd = 3, col = 'red', bty = 'l')

lines(abundance ~ t, data = sim3.frame, type = 'l', lwd = 3, col = 'green', bty = 'l')
```

```
?points

?legend


legend(60, 4e+10, c("r = 0.25", "r = 0.5", "r = 1"), lty=c(1,1,1), lwd=c(2.5, 2.5, 2.5), col=c("purple", "red",
"green"))
```