Bayesian Statistics, Assignment 1

Francesco Caporali

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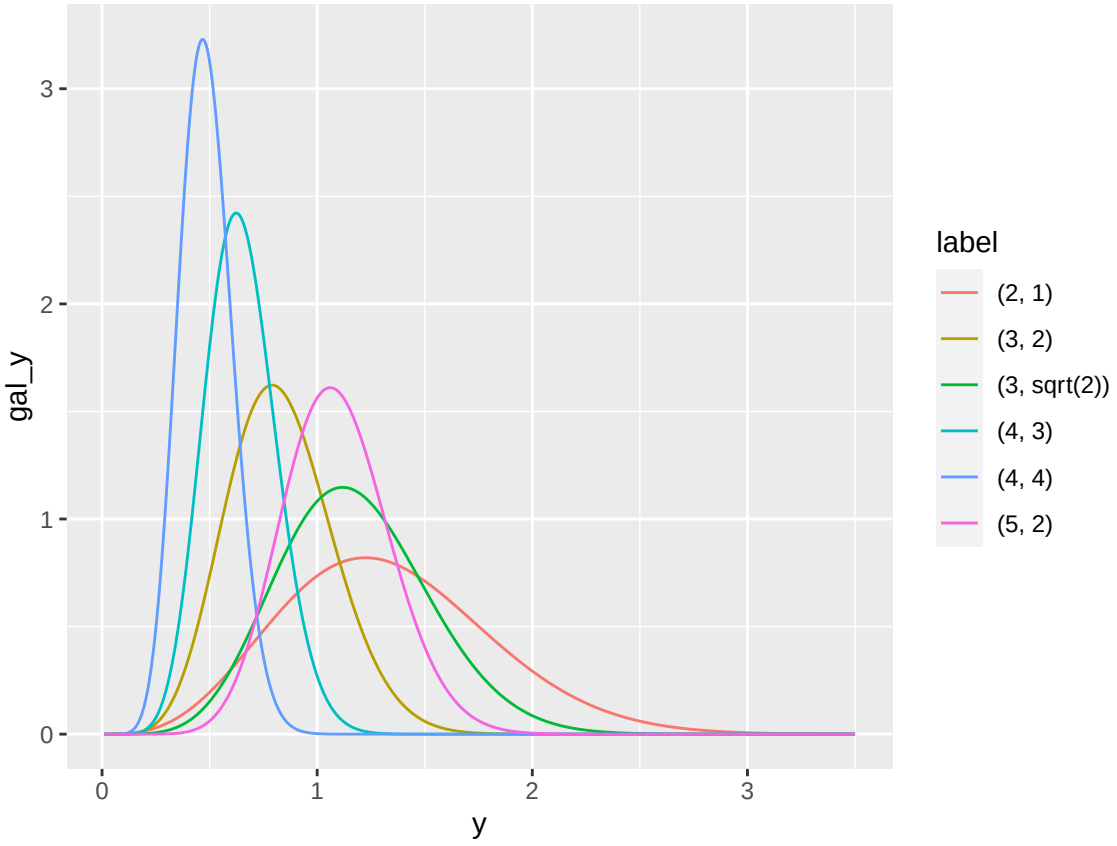
Question 1

a.

```
dgalenshore = function(y, a, theta) {
    (2 / gamma(a)) * theta^(2 * a) * y^(2 * a - 1) * exp(-(theta^2) * y^2)
}

y = seq(0.01, 3.5, length = 1000)
df = rbind(
    data.frame(y = y, gal_y = dgalenshore(y, 2, 1), label = "(2, 1)"),
    data.frame(y = y, gal_y = dgalenshore(y, 3, sqrt(2)), label = "(3, sqrt(2))"),
    data.frame(y = y, gal_y = dgalenshore(y, 3, 2), label = "(3, 2)"),
    data.frame(y = y, gal_y = dgalenshore(y, 5, 2), label = "(5, 2)"),
    data.frame(y = y, gal_y = dgalenshore(y, 4, 3), label = "(4, 3)"),
    data.frame(y = y, gal_y = dgalenshore(y, 4, 4), label = "(4, 4)")
)

ggplot(df, aes(y, gal_y, group = label, color = label)) +
geom_line() + coord_fixed(ratio = 1)
```



b.