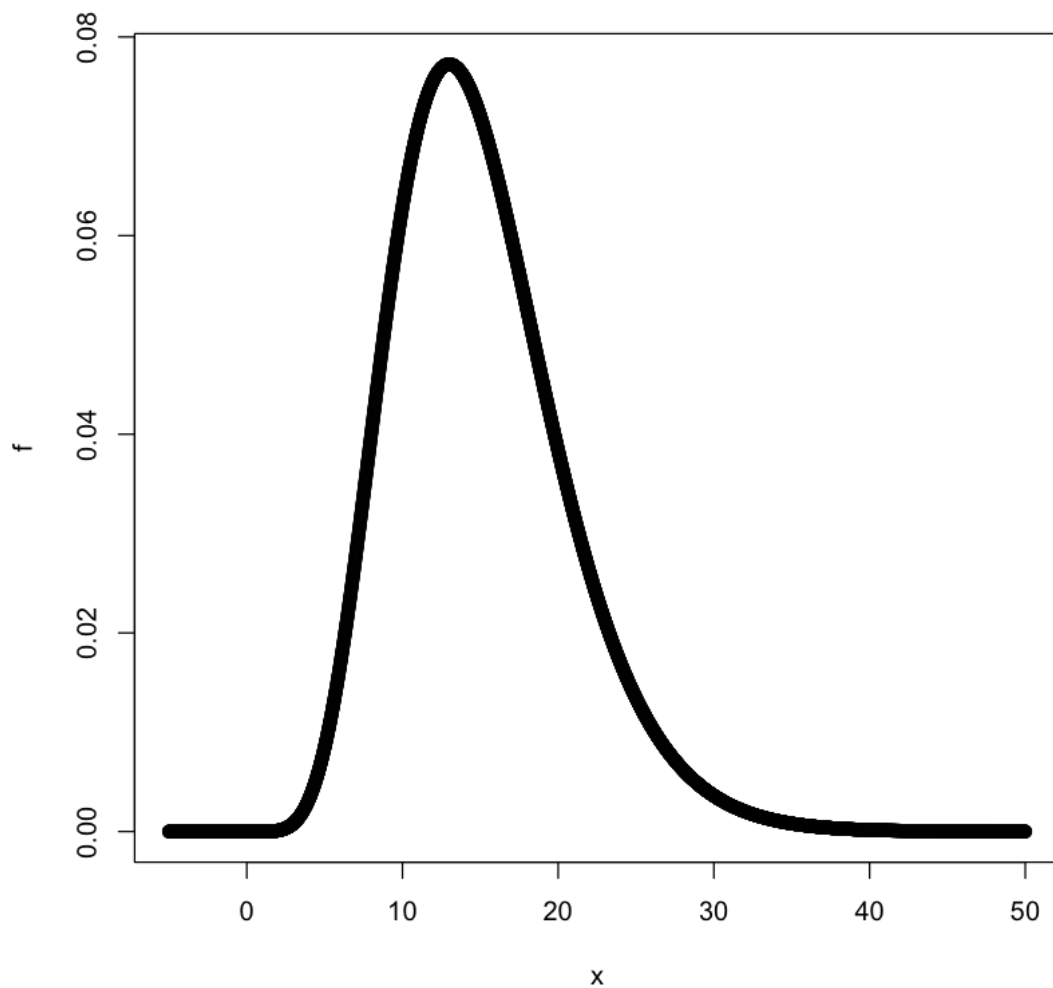# Q2 Hypothesis Testing

January 15, 2020

1 Notebook for Inference Assessment Q2

```
[1]: x <- seq(-5,50,0.01)
     f <- dchisq(x, df = 15)
```

1.1 Quick plot of the χ^2 distribution with 15 degrees of freedom

```
[2]: plot(x,f)
```

1.2 Q2b) $n = $ degrees of freedom $= 15$, $\sigma_0^2 = 4$, $\alpha = 0.05$, what is c?

```
[3]: c <- qchisq(p = 0.05, df = 15, lower.tail = FALSE) * 4
     c
```

99.9831605589145

1.2.1 Quick check that the answer is sensible (this should produce $\alpha = 0.05$)

```
[27]: 1 - pchisq(q = 25, df = 15, lower.tail = TRUE)
```

0.0499434336264284

1.3 Q2c) $n = $ degrees of freedom $= 15$, $\sigma_1^2 = 16$, $c = 99.983$, what is β?

```
[31]: beta <- pchisq(q = 6.249, df = 15, lower.tail = TRUE)
      beta
```

0.0247453053395402