Mathematical Annotation

R can produce LATEX-like symbols on a plot for mathematical annotation. This is very handy and is useful for making fun of people who use other statistical packages.

- Math symbols are "expressions" in R and need to be wrapped in the expression function
- There is a set list of allowed symbols and this is documented in ?plotmath
- Plotting functions that take arguments for text generally allow expressions for math symbols

Some examples.

```
plot(0, 0, main = expression(theta == 0),
     ylab = expression(hat(gamma) == 0),
     xlab = expression(sum(x[i] * y[i], i==1, n)))
```

Pasting strings together.

```
x <- rnorm(100)
hist(x,
     xlab=expression("The mean (" * bar(x) * ") is " *
                     sum(x[i]/n,i==1,n)))
```

Substituting

What if you want to use a computed value in the annotation?

```
x <- rnorm(100)
y <- x + rnorm(100, sd = 0.5)
plot(x, y,
     xlab=substitute(bar(x) == k, list(k=mean(x))),
     ylab=substitute(bar(y) == k, list(k=mean(y)))
     )
```

Or in a loop of plots

```
par(mfrow = c(2, 2))
for(i in 1:4) {
        x <- rnorm(100)
        hist(x, main=substitute(theta==num,list(num=i)))
}
```

Summary of Important Help Pages

- ?par
- ?plot
- ?xyplot
- ?plotmath
- ?axis