

Class Prep 4 | 2.3.1

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Section 2.3.1 Round Off Error and Machine ϵ

```
.Machine$double.eps
## [1] 2.220446e-16
print(1 + .Machine$double.eps, digits = 20)
## [1] 1.000000000000000222
print(1 + .Machine$double.eps * 2, digits = 20)
## [1] 1.0000000000000004441
print(1 + .Machine$double.eps/2, digits = 20)
## [1] 1
.Machine$double.neg.eps
## [1] 1.110223e-16
print(1 - .Machine$double.neg.eps, digits = 20)
## [1] 0.99999999999999988898
print(1 - .Machine$double.neg.eps * 2, digits = 20)
## [1] 0.99999999999999977796
print(1 - .Machine$double.neg.eps/2, digits = 20)
## [1] 1
print(1000 + .Machine$double.neg.eps, digits = 20)
## [1] 1000
library(pracma)
eps(1000)
## [1] 1.136868e-13
eps(1000000)
## [1] 1.164153e-10
```

```
eps(1000000000)
```

```
## [1] 1.192093e-07
```