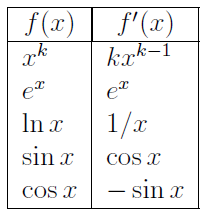
20181015c standard derivatives

cheungngo

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Standard derivatives

### 

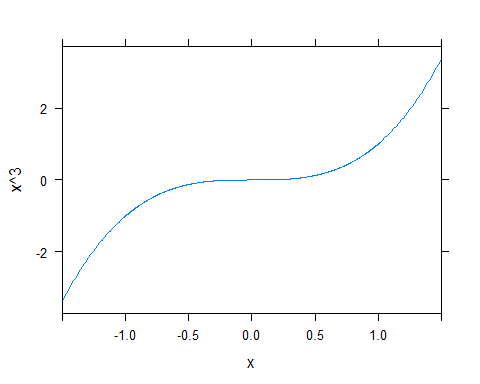
library(Ryacas)  
library(mosaic)

### x^k

x = Sym('x')  
k = Sym('k')  
deriv(x^k,x)

## expression(k \* x^(k - 1))

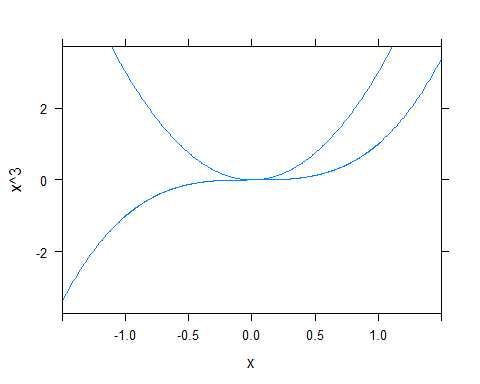
plotFun(x^3~x)



deriv(x^3,x)

## expression(3 \* x^2)

plotFun(3 \* x^2~x, add = T)



### exp(x)

deriv(exp(x),x)

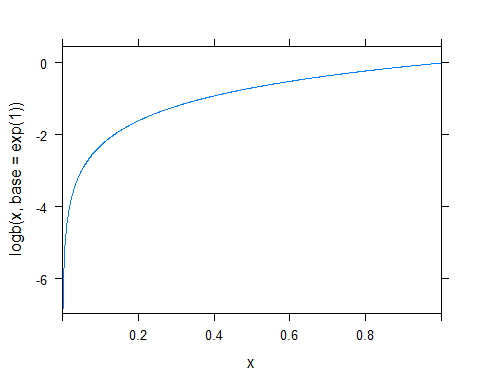
## expression(exp(x))

### logb(x)

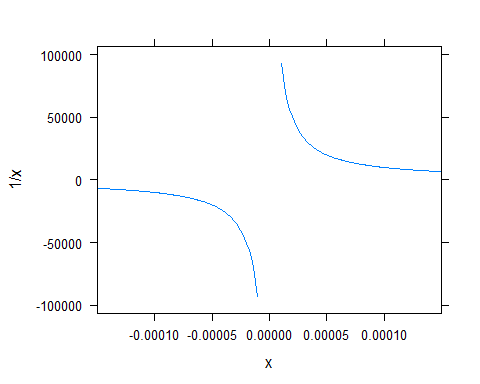
deriv(logb(x,base = exp(1)),x)

## expression(1/x)

plotFun(logb(x,base = exp(1))~x)



plotFun(1/x~x)

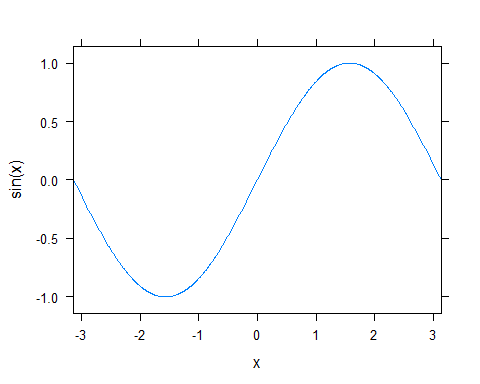


### sin(x)

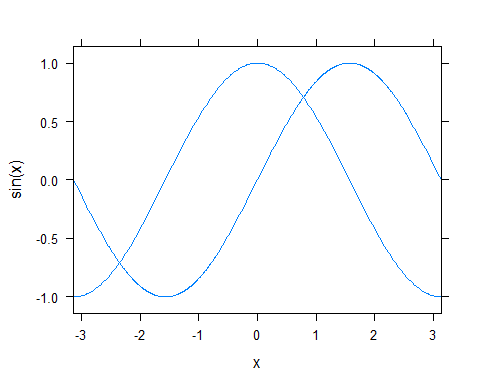
deriv(sin(x),x)

## expression(cos(x))

plotFun(sin(x)~x,xlim=c(-3.14,3.14))



plotFun(cos(x)~x,add=T)

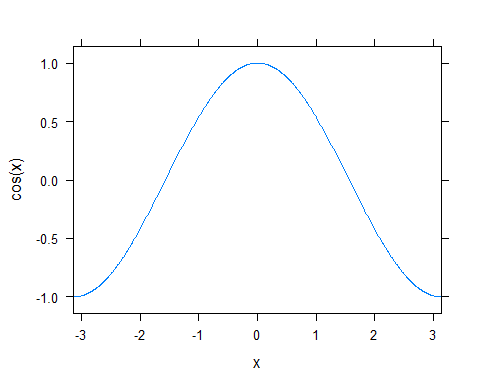


### cos(x)

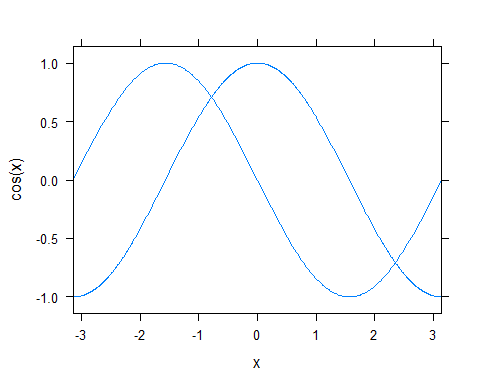
deriv(cos(x),x)

## expression(-sin(x))

plotFun(cos(x)~x,xlim=c(-3.14,3.14))



plotFun(-sin(x)~x,add=T)



#### note that for trigonometrical function it tends to shift leftward for both sin and cos derivatives