Part I Chapter 1 Lab

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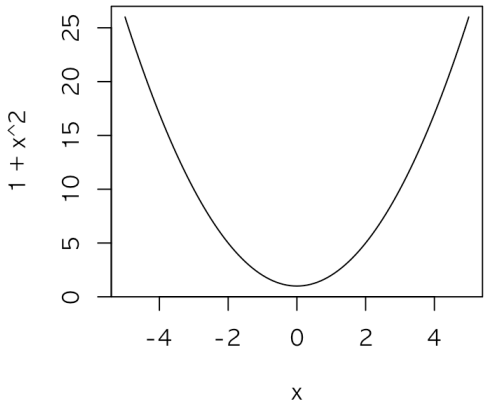
1.1

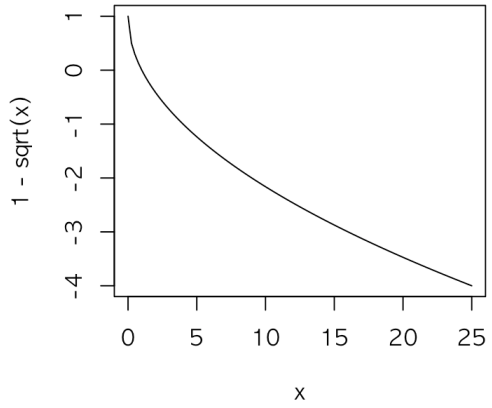
1.1.1 $f(x) = 1 + x^2$

```
curve(1 + x^2, -5, 5)
```



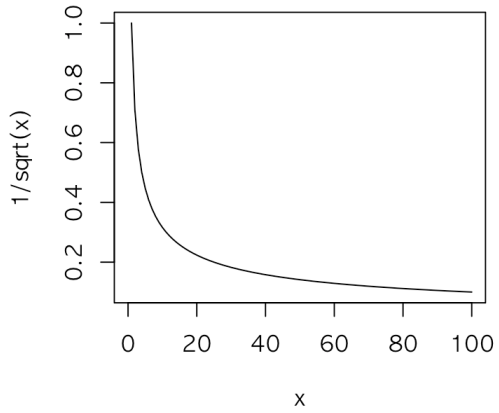
1.1.2 $f(x) = 1 - \sqrt{x}$

```
curve(1 - sqrt(x), 0, 25)
```



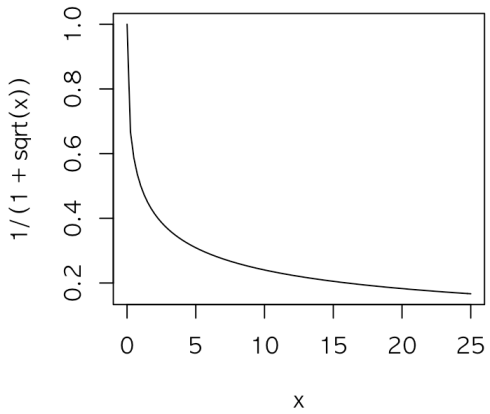
1.1.3 $f(x) = \frac{1}{\sqrt{x}}$

```
curve(1 / sqrt(x), 0, 100)
```



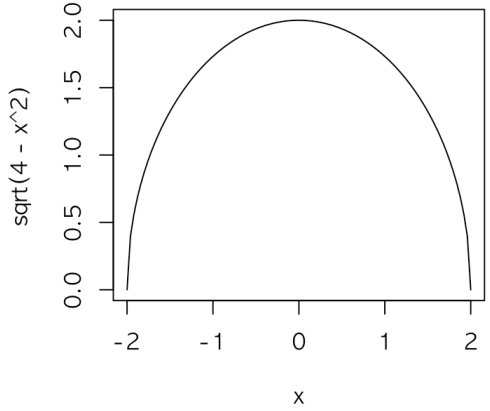
1.1.4 $f(x) = \frac{1}{1+\sqrt{x}}$

```
curve(1 / (1 + sqrt(x)), 0, 25)
```



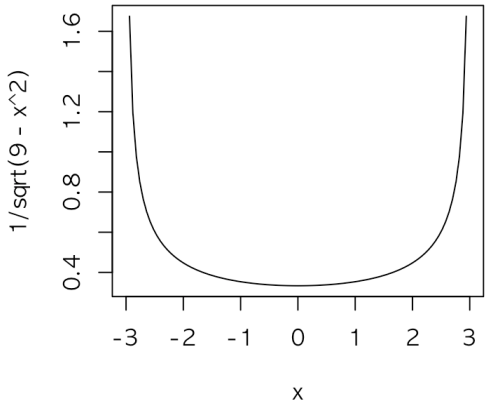
1.1.5 $f(x) = \sqrt{4 - x^2}$

```
curve(sqrt(4 - x^2), -2, 2)
```



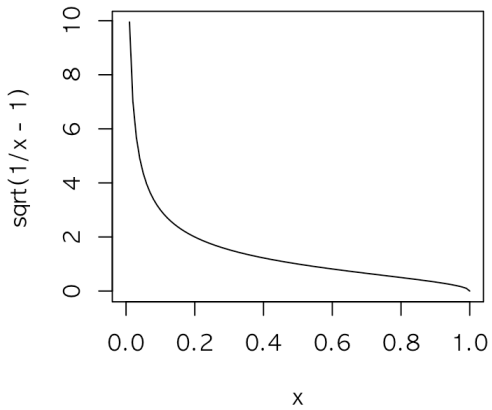
1.1.6 $f(x) = \frac{1}{\sqrt{9-x^2}}$

```
curve(1/sqrt(9 - x^2), -3, 3)
```



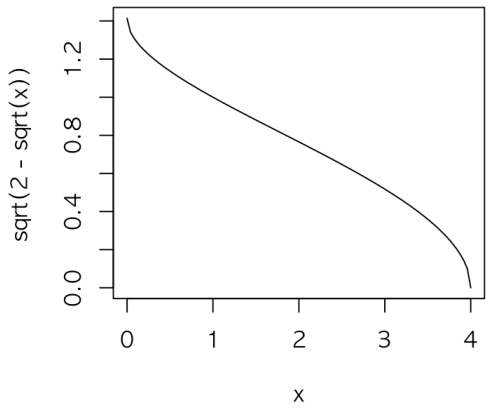
1.1.7 $f(x) = \sqrt{\frac{1}{x} - 1}$

```
curve(sqrt(1/x - 1), 0, 1)
```



1.1.8 $f(x) = \sqrt{2 - \sqrt{x}}$

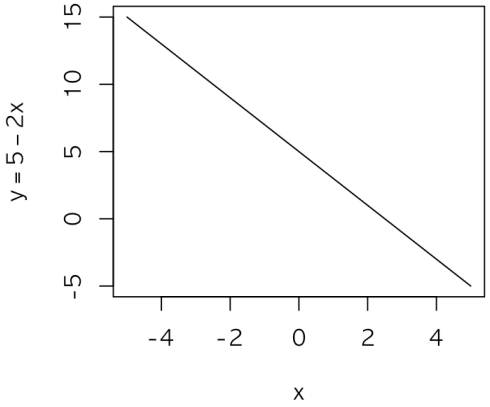
```
curve(sqrt(2 - sqrt(x)), 0, 4)
```



1.2

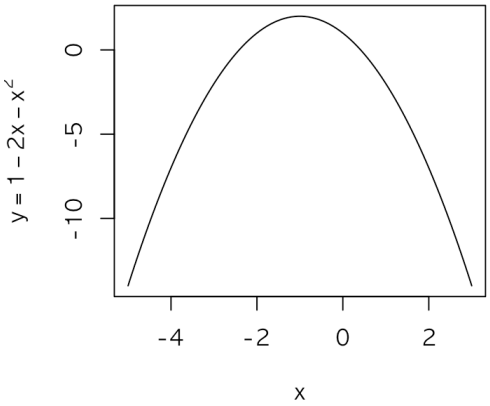
1.2.1 $f(x) = 5 - 2x$

```
x <- seq(-5, 5, length=100)
y <- 5 - 2 * x
plot(x, y, ylab=expression(y == 5 - 2*x), type="l")
```



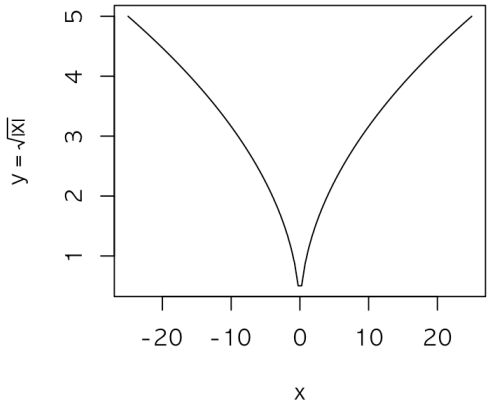
1.2.2 $f(x) = 1 - 2x - x^2$

```
x <- seq(-5, 3, length=100)
y <- 1 - 2*x - x^2
plot(x, y, ylab=expression(y == 1 - 2*x - x^2), type="l")
```



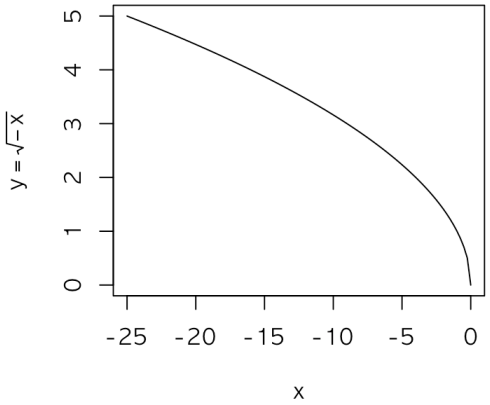
1.2.3 $f(x) = \sqrt{|x|}$

```
x <- seq(-25, 25, length=100)
y <- sqrt(abs(x))
plot(x, y, ylab=expression(y == sqrt(abs(x))), type="l")
```



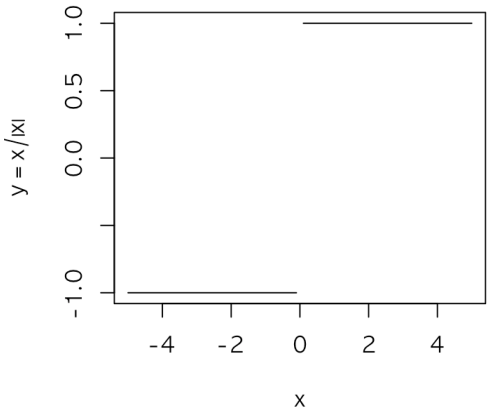
1.2.4 $f(x) = \sqrt{-x}$

```
x <- seq(-25, 0, length=100)
y <- sqrt(-x)
plot(x, y, ylab=expression(y == sqrt(-x)), type="l")
```



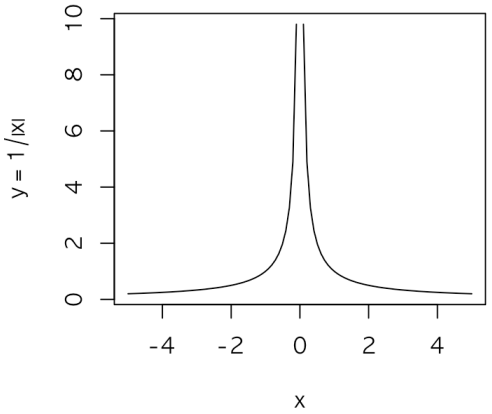
1.2.5 $f(x) = \frac{x}{|x|}$

```
x <- seq(-5, 5, length=99)
y <- x/abs(x)
plot(x, y, ylab=expression(y == x/abs(x)), type="l")
```



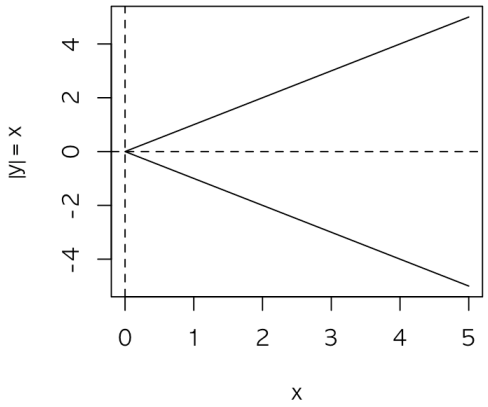
1.2.6 $f(x) = \frac{1}{|x|}$

```
x <- seq(-5, 5, length=99)
y <- 1/abs(x)
plot(x, y, ylab=expression(y == 1/abs(x)), type="l")
```



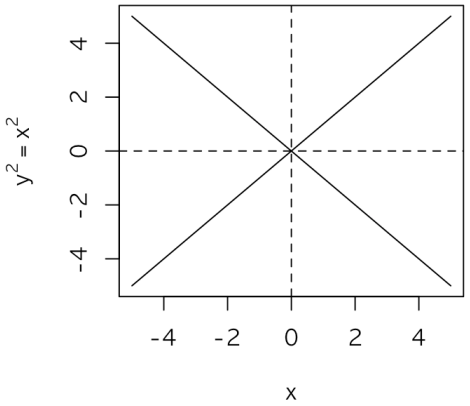
1.2.7 $|y| = x$

```
y <- seq(-5, 5, length=99)
x <- ifelse(y >= 0, y, -y)
plot(x, y, ylab=expression(abs(y) == x), type="l")
abline(h=0, v=0, lty=2)
```



1.2.8 $y^2 = x^2$

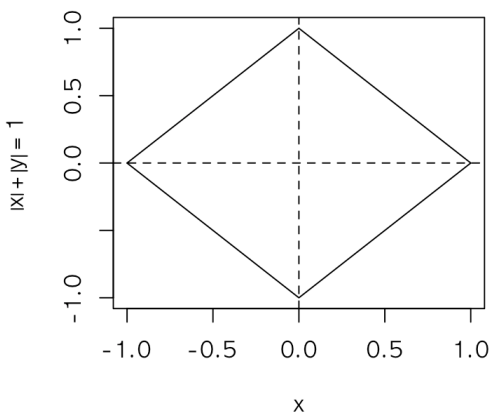
```
opar <- par(no.readonly=TRUE)
par(mai = c(1.02, 1.02, 0.82, 0.42))
x <- seq(-5, 5, length=99)
y1 <- ifelse(x >= 0, x, -x)
y2 <- -y1
plot(x, y1, ylab=expression(y^2==x^2), type="l", ylim=c(-5, 5))
lines(x, y2)
abline(h=0, v=0, lty=2)
```




```
par(opar)
```

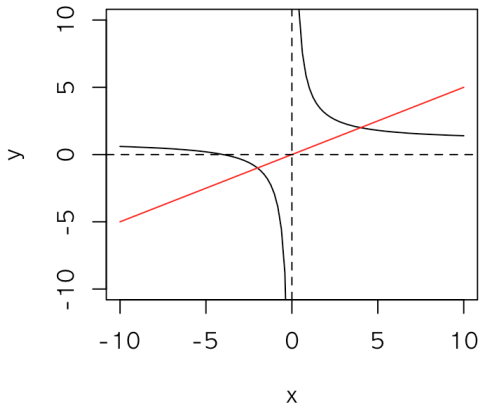
1.2.9 $|x| + |y| = 1$

```
x <- seq(-1, 1, length=99)
y1 <- ifelse(x >= 0, 1-x,  1+x)
y2 <- -y1
plot(x, y1, ylab=expression(abs(x)+abs(y)==1), type="l", ylim=c(-1, 1))
lines(x, y2)
abline(h=0, v=0, lty=2)
```



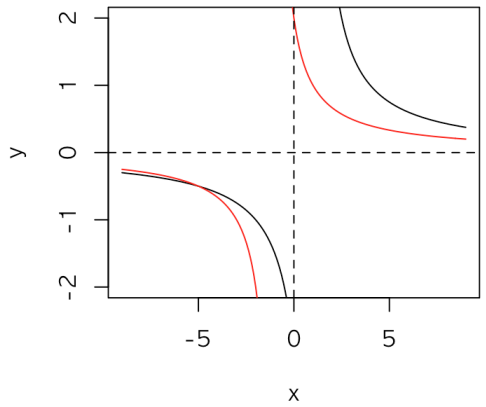
1.2.11 $f(x) = 1 + (4/x), g(x) = x/2$

```
x <- seq(-10, 10, length=99)
y1 <- 1 + 4/x
y2 <- x/2
plot(x, y1, ylab="y", type="l", ylim=c(-10, 10))
lines(x, y2, col="red")
abline(h=0, v=0, lty=2)
```



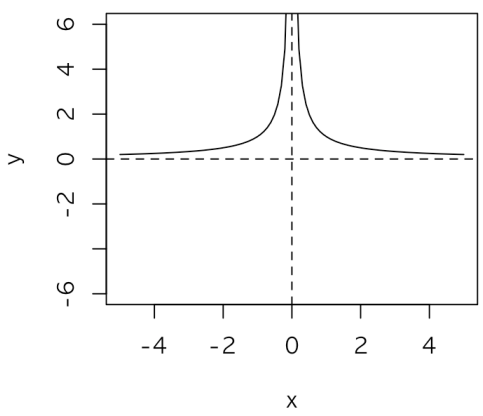
1.2.12 $f(x) = 3/(x-1), g(x) = 2/(x+1)$

```
x <- seq(-9, 9, length=199)
y1 <- 3/(x - 1)
y2 <- 2/(x + 1)
plot(x, y1, ylab="y", type="l", ylim=c(-2, 2))
lines(x, y2, col="red")
abline(h=0, v=0, lty=2)
```



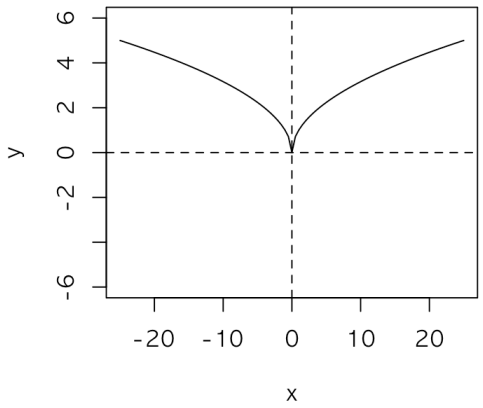
1.3.5 $y = \frac{1}{|x|}$

```
x <- seq(-5, 5, length=99)
y <- ifelse(x >= 0, 1/x, -1/x)
plot(x, y, ylab="y", type="l", ylim=c(-6, 6))
abline(h=0, v=0, lty=2)
```



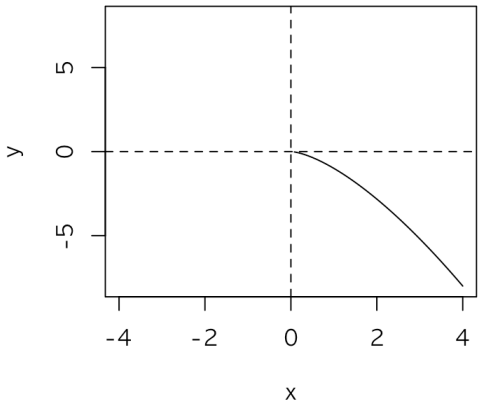
1.3.6 $y = \sqrt{|x|}$

```
x <- seq(-25, 25, length=99)
y <- sqrt(abs(x))
plot(x, y, ylab="y", type="l", ylim=c(-6, 6))
abline(h=0, v=0, lty=2)
```



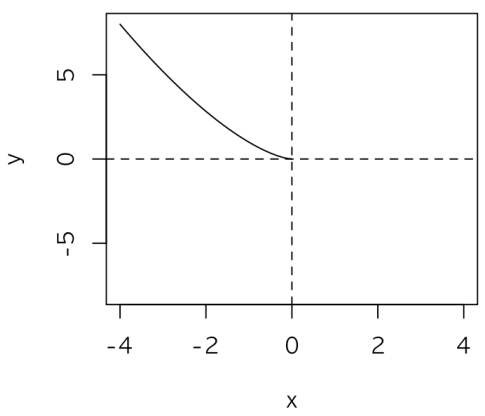
1.3.10 $y = -x^{3/2}$

```
x <- seq(-4, 4, length=99)
y <- -x^(3/2)
plot(x, y, ylab="y", type="l", ylim=c(-8, 8))
abline(h=0, v=0, lty=2)
```



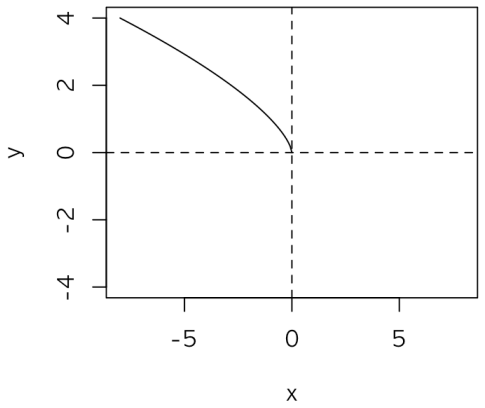
1.3.11 $y = (-x)^{3/2}$

```
x <- seq(-4, 4, length=99)
y <- (-x)^(3/2)
plot(x, y, ylab="y", type="l", ylim=c(-8, 8))
abline(h=0, v=0, lty=2)
```



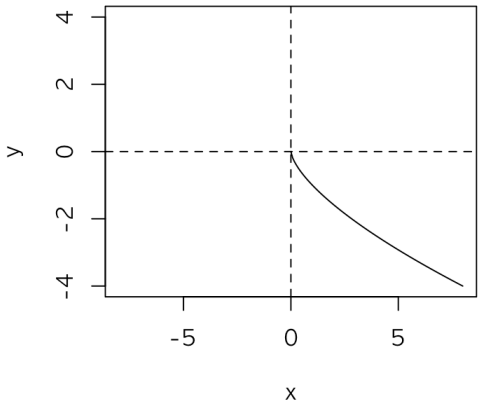
1.3.12 $y = (-x)^{2/3}$

```
x <- seq(-8, 8, length=199)
y <- (-x)^(2/3)
plot(x, y, ylab="y", type="l", ylim=c(-4, 4))
abline(h=0, v=0, lty=2)
```



1.3.13 $y = -x^{2/3}$

```
x <- seq(-8, 8, length=199)
y <- -x^(2/3)
plot(x, y, ylab="y", type="l", ylim=c(-4, 4))
abline(h=0, v=0, lty=2)
```



자료 저장

```
save.image("Part_I_Chap_1_lab.rda")
```