> pdf(file="half sphere.pdf")

> x <- matrix(rep(seq(-5, 5, length= 100),100),100,100)

> y <- t(x)

> f <- function(x, y) { r <- sqrt((25-x^2-y^2)\*(25-x^2+-y^2>0)) }

> z <- f(x,y)

> z[z==0] <- NA

> persp(x[,1], y[1,], z, theta = 0, phi = 0, expand = 1, col = "red", xlab="x", ylab="y", zlab="z")

> contour(z)

> image(z)

> contour(z, add=TRUE)

> x <- runif(100, min=-1, max=1)

> y <- runif(100, min=-1, max=1)

> z <- 1 + x + 2 \* y + rnorm(100)

> reg <- lm(z~x+y)

> x1<-matrix(rep(seq(-1, 1, length=10),10), 10, 10)

> y1<-t(x1)

> zhat<-reg$coefficients[1]+reg$coefficients[2]\*x1+reg$coefficients[3]\*y1

> surface <- persp(x1[,1], y1[1,], zhat, theta = 0, phi = 0, expand = 1, col = heat.colors(30))

> surface

[,1] [,2] [,3] [,4]

[1,] 1 0.000000e+00 0.000000e+00 0.000000e+00

[2,] 0 6.123032e-17 -1.000000e+00 1.000000e+00

[3,] 0 3.338293e-01 2.044047e-17 -2.044047e-17

[4,] 0 -2.748901e-01 -2.732051e+00 3.732051e+00

> xy.list = trans3d(x, y, z, surface)

> points(xy.list, pch=20, col=heat.colors(10))

> dev.off()

RStudioGD

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