Text, letter

Description automatically generated

R Code

x1 = -10:10

x2 = 1 + 3 \* x1

plot(x1, x2, type = "l", col = "red")

text(c(0), c(-20), "greater than 0", col = "red")

text(c(0), c(20), "less than 0", col = "red")

lines(x1, 1 - x1/2)

text(c(0), c(-15), "less than 0")

text(c(0), c(15), "greater than 0")

Chart, line chart

Description automatically generated

Text, letter

Description automatically generated

radius = 2

plot(NA, NA, type = "n", xlim = c(-4, 2), ylim = c(-1, 5), asp = 1, xlab = "X1",

ylab = "X2")

symbols(c(-1), c(2), circles = c(radius), add = TRUE, inches = FALSE)

Chart

Description automatically generated

Text, letter

Description automatically generated

radius = 2

plot(NA, NA, type = "n", xlim = c(-4, 2), ylim = c(-1, 5), asp = 1, xlab = "X1",

ylab = "X2")

symbols(c(-1), c(2), circles = c(radius), add = TRUE, inches = FALSE)

text(c(-1), c(2), "< 4")

text(c(-4), c(2), "> 4")

Chart, bubble chart

Description automatically generated

Text, letter

Description automatically generated

radius = 2

plot(c(0, -1, 2, 3), c(0, 1, 2, 8), col = c("blue", "red", "blue", "blue"),

type = "p", asp = 1, xlab = "X1", ylab = "X2")

symbols(c(-1), c(2), circles = c(radius), add = TRUE, inches = FALSE)

Chart, bubble chart

Description automatically generated

Text

Description automatically generated

(1+*X*1)2+(2−*X*2)2>4

1+2*X*1+*X*21+4−4*X*2+*X*22>4

5+2*X*1−4*X*2+*X*21+*X*22>4

* The decision boundary is a sum of quadratic terms when expanded.