# Define the function to integrate

f <- function(x) x^2

# Set the number of random points to generate

n\_points <- 1000

# Generate random points within the integration interval

x <- runif(n\_points, min = 0, max = 1)

y <- runif(n\_points, min = 0, max = 1)

# Calculate the maximum value of the function over the integration interval

f\_max <- max(f(x))

# Count the number of points that fall below the function

n\_below <- sum(y <= f(x))

# Approximate the area under the curve as the ratio of points below the function to the total number of points

area\_approx <- n\_below / n\_points

# Approximate the integral as the area under the curve multiplied by the maximum value of the function

integral\_approx <- area\_approx \* f\_max

# Plot the random points and the function

plot(x, y, pch = 20, col = ifelse(y <= f(x), "blue", "red"), xlab = "x", ylab = "y")

curve(f, add = TRUE, col = "black")

# Print the approximation

cat("Approximation of integral:", integral\_approx, "\n")

ملاحظة: لاتمسح ولا تضيف على الكود أعلاه لانه لن يعمل بشكل صحيح