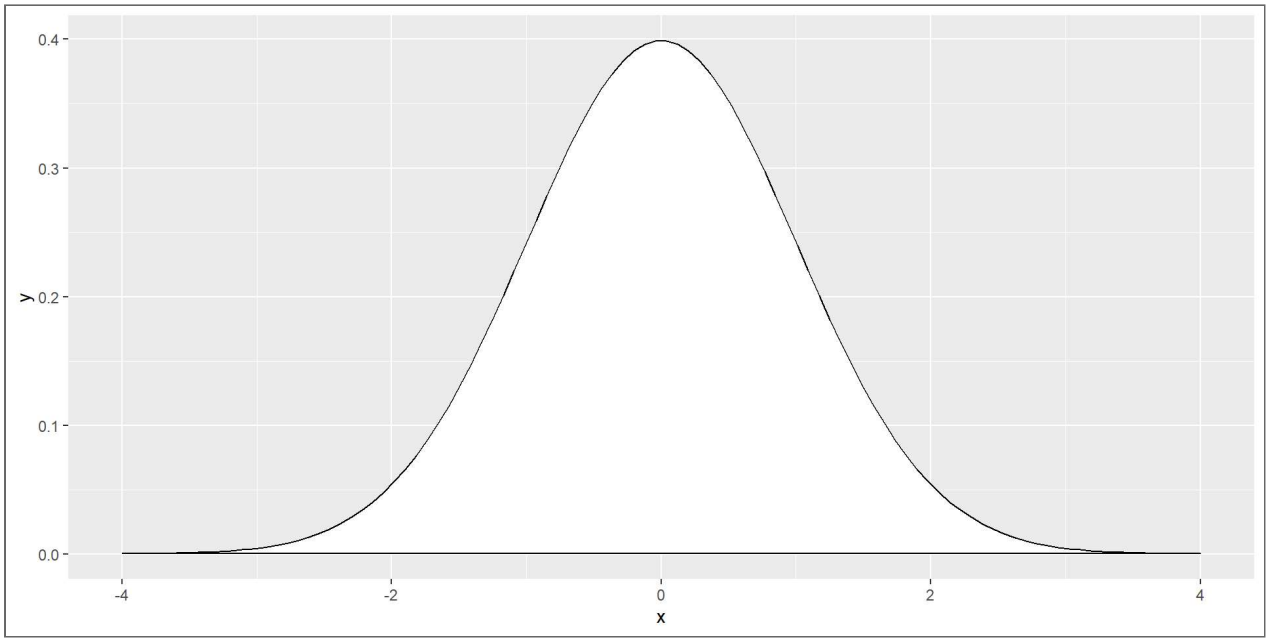
Normal probabilities and quantiles

This program displays the standard normal curve along with various probabilities and quantiles. It was written by Steve Simon and Leroy Wheeler on 2024-09-04 and is placed in the public domain.

Load the tidyverse library

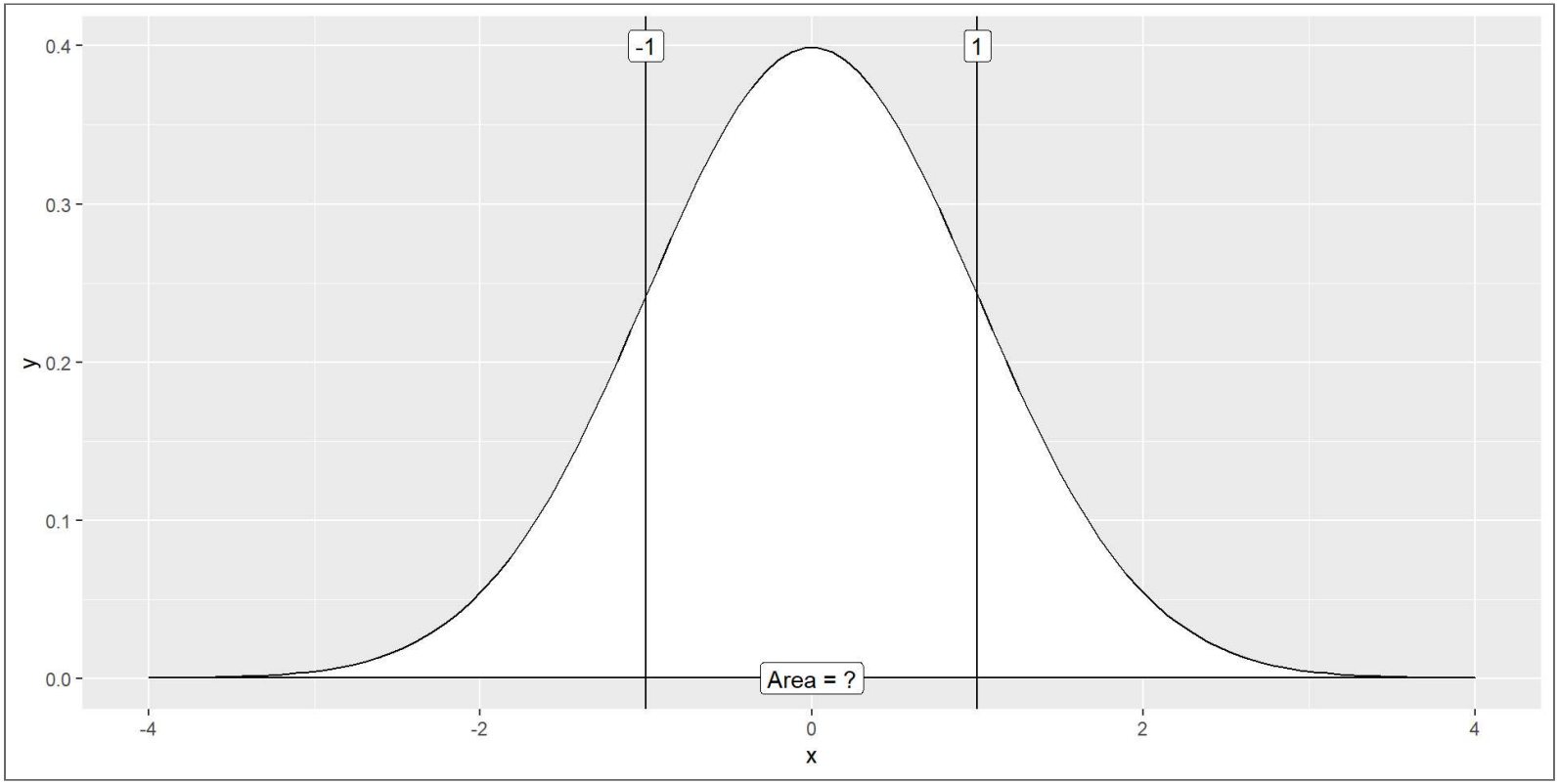
Using R to draw the standard normal curve

use seq to calculate 100 evenly spaced values between -4 and +4 and dnorm to compute the bell curve at each point. Use geom_polygon to paint the area surrounded by the bell curve.



P[-1 < Z < 1]

```
[1] 0.6826895
```

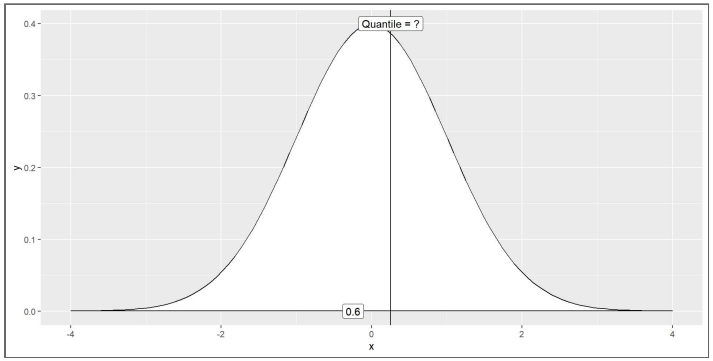


There is a 68% percent chance of getting values between 1 and -1 in the above standard normal distribution curve.

60th percentile of a standard normal

Use qnorm to calculate quantiles of the standard normal distribution.

```
[1] 0.2533471
```



The value of 0.25 on a standard normal distribution curve is the 60th percentile. This means that there is a 60% probability of getting values less than 0.25 and 40% probability of getting values greater than 0.25.