

# fplot.R

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```
# Plot a function  $y = f(x)$ 
# Load necessary libraries
library(ggplot2)

# Minimum and maximum values of  $x$ 
xmin <- -5
# Use for  $\ln$  function, must have  $x > 0$ 
# xmin <- 0.001
xmax <- 5
# Divisions between xmin and xmax (more = smoother graph)
xdiv <- 100
xlength <- (xmax-xmin)/xdiv

# Find  $x$  values for the plot
x <- seq(xmin,xmax,xlength)

# Insert  $y = f(x)$  formula here
# line function
y <- 2*x + 1
# quadratic function
#y <- -x**2 + 2*x + 5
# exponential function
#y <- exp(x)
# ln function
#y <- log(x)
# absolute value function
#y <- abs(x)
# normal distribution
#mu <- 1
#sig2 <- 1
#y <- (1/sqrt(2*3.14159*sig2))*exp(-((x-mu)**2)/(2*sig2))

# Make data frame for ggplot2
plotdata <- as.data.frame(cbind(x,y))

# Print data
plotdata
```

```
##      x      y
## 1 -5.0 -9.0
## 2 -4.9 -8.8
## 3 -4.8 -8.6
## 4 -4.7 -8.4
## 5 -4.6 -8.2
## 6 -4.5 -8.0
## 7 -4.4 -7.8
## 8 -4.3 -7.6
```

```
## 9   -4.2 -7.4
## 10  -4.1 -7.2
## 11  -4.0 -7.0
## 12  -3.9 -6.8
## 13  -3.8 -6.6
## 14  -3.7 -6.4
## 15  -3.6 -6.2
## 16  -3.5 -6.0
## 17  -3.4 -5.8
## 18  -3.3 -5.6
## 19  -3.2 -5.4
## 20  -3.1 -5.2
## 21  -3.0 -5.0
## 22  -2.9 -4.8
## 23  -2.8 -4.6
## 24  -2.7 -4.4
## 25  -2.6 -4.2
## 26  -2.5 -4.0
## 27  -2.4 -3.8
## 28  -2.3 -3.6
## 29  -2.2 -3.4
## 30  -2.1 -3.2
## 31  -2.0 -3.0
## 32  -1.9 -2.8
## 33  -1.8 -2.6
## 34  -1.7 -2.4
## 35  -1.6 -2.2
## 36  -1.5 -2.0
## 37  -1.4 -1.8
## 38  -1.3 -1.6
## 39  -1.2 -1.4
## 40  -1.1 -1.2
## 41  -1.0 -1.0
## 42  -0.9 -0.8
## 43  -0.8 -0.6
## 44  -0.7 -0.4
## 45  -0.6 -0.2
## 46  -0.5  0.0
## 47  -0.4  0.2
## 48  -0.3  0.4
## 49  -0.2  0.6
## 50  -0.1  0.8
## 51   0.0  1.0
## 52   0.1  1.2
## 53   0.2  1.4
## 54   0.3  1.6
## 55   0.4  1.8
## 56   0.5  2.0
## 57   0.6  2.2
## 58   0.7  2.4
## 59   0.8  2.6
## 60   0.9  2.8
## 61   1.0  3.0
## 62   1.1  3.2
```

```
## 63  1.2  3.4
## 64  1.3  3.6
## 65  1.4  3.8
## 66  1.5  4.0
## 67  1.6  4.2
## 68  1.7  4.4
## 69  1.8  4.6
## 70  1.9  4.8
## 71  2.0  5.0
## 72  2.1  5.2
## 73  2.2  5.4
## 74  2.3  5.6
## 75  2.4  5.8
## 76  2.5  6.0
## 77  2.6  6.2
## 78  2.7  6.4
## 79  2.8  6.6
## 80  2.9  6.8
## 81  3.0  7.0
## 82  3.1  7.2
## 83  3.2  7.4
## 84  3.3  7.6
## 85  3.4  7.8
## 86  3.5  8.0
## 87  3.6  8.2
## 88  3.7  8.4
## 89  3.8  8.6
## 90  3.9  8.8
## 91  4.0  9.0
## 92  4.1  9.2
## 93  4.2  9.4
## 94  4.3  9.6
## 95  4.4  9.8
## 96  4.5 10.0
## 97  4.6 10.2
## 98  4.7 10.4
## 99  4.8 10.6
## 100 4.9 10.8
## 101 5.0 11.0
```

```
# Plot the values
ggplot(plotdata,aes(x,y))+
  geom_line(color="red",size=1)+
  ggtitle("Plot a function  $y = f(x)$ ")
```

Plot a function  $y = f(x)$

