

# beginning.qmd

1. Start an RStudio project. Recommended name: `pset-01-rmarkdown`. Start a quarto document called `beginning.qmd`.
2. Create a directory called `img` and save a screen shot of your RStudio session for the project. Include your screen shot in the quarto document.

```
mkdir img
```

```
mv ~/Desktop/screen_shot_RStudio_session.png img/screen_shot_RStudio_session.png
```

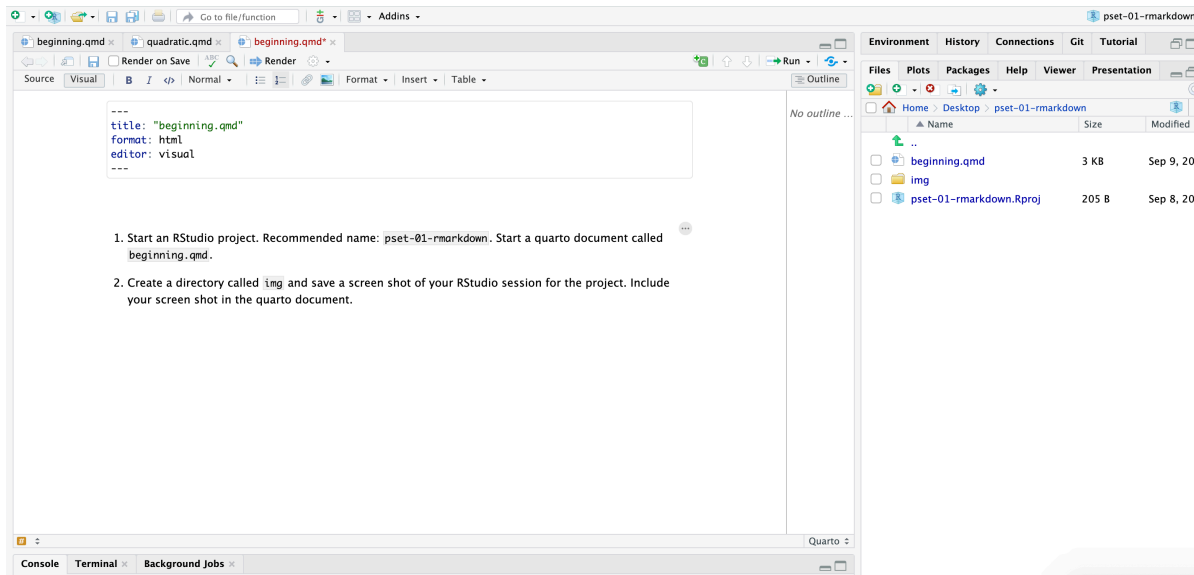


Figure 1: RStudio Screenshot

3. Write a Quarto document that defines variables  $a = 1, b = -1, c = -2$  and print out the solutions to  $f(x) = ax^2 + bx + c = 0$ . Do not report complex solutions, only real numbers.

```
a <- 1
b <- -1
c <- -2

solve_quadratic <- function(a, b, c) {
  discriminant <- b^2 - 4*a*c

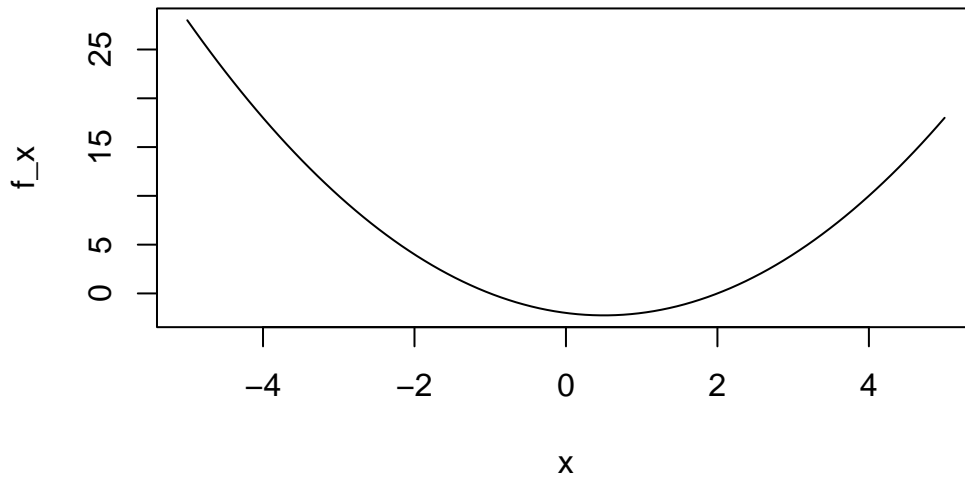
  if (discriminant < 0) {
    return("No real solutions")
  } else if (discriminant == 0) {
    solution <- -b / (2*a)
    return(paste("One solution:", solution))
  } else {
    sol1 <- (-b + sqrt(discriminant)) / (2*a)
    sol2 <- (-b - sqrt(discriminant)) / (2*a)
    return(paste("Two solutions:", sol1,',', sol2))
  }
}

solve_quadratic(a, b, c)
```

```
[1] "Two solutions: 2 , -1"
```

4. Include a graph of  $f(x)$  versus  $x$  for  $x \in (-5, 5)$ .

```
x <- seq(-5, 5, length = 100)
f_x <- a*x^2+b*x+c
plot(x,f_x,type='l')
```



5. Create a directory called 'docs'. Use the command 'quarto render' to create a PDF and save it to the 'docs' directory. Show us the command you typed:

```
mkdir docs
install.packages("tinytex")
quarto render beginning.qmd --to pdf --output-dir docs
```

6. Use Unix to create a directory called **data** in the project home directory. Include the Unix command you used to create the directory.

```
mkdir data
```

7. Use a terminal-based text editor to create a file **coefs.txt** in the **data** directory and save three coefficients, 1 -1 -2 for example. Show us the Unix commands you used to achieve this:

```
nano data/coefs.txt
```

Then I pressed Ctrl + O and Enter to save the file, and I pressed Ctrl + X to exit.

8. Make a directory called **code**. Use Unix to copy the file **beginning.qmd** to file called **quadratic.qmd** in the code directory. Show us the Unix commands you used.

```
mkdir data
cp beginning.qmd code/quadratic.qmd
```

9. Edit the `quadratic.qmd` file to read in `a`, `b`, and `c` from the file `coefs.txt`. Make sure to use a relative path when reading the file. As before, print out the solutions to  $f(x) = ax^2 + bx + c = 0$ . Do not report complex solutions, only real numbers.
10. Change the path of the file you are reading to the full path you get when you type `file.path(getwd(), "data/coefs.txt")`. Confirm that the files still renders. Then move the entire `pset-01-rmarkdown` to a directory called `RtmpyDknq4`. Does the file render? Change the path back to a relative path and see if it renders.