

CHBE424_Quiz5

Michael Volk

April 24, 2020

Contents

0.1	Problem 1 (10 points)	1
0.2	R Markdown	1
0.3	Including Plots	2

0.1 Problem 1 (10 points)

From mass transfer flux,

$$-W_{Ar} = k_c(C_{Ab} - C_{As})$$

From the surface reaction,

$$-r''_{AS} = k''(C_{AS} - C_{Ae})$$

At steady-state, $W_{Ar} = r''_{As}$

Hence,

$$k_c(C_{Ab} - r''_{As})$$

$$\Rightarrow k_c C_{Ab} + k'' C_{Ae} = (k'' + k_c) C_{Ae}$$

$$\Rightarrow C_{As} = \frac{k_c C_{Ab} + k'' C_{Ae}}{k'' + k_c}$$

Hence, the overall rate is given as

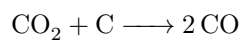
$$-r''_{As} = k''(C_{As} - C_{Ae}) = k'' \frac{k_c C_{Ab} + k'' C_{Ae}}{k'' + k_c} - C_{Ae}$$

0.2 R Markdown

Here is an example of inserting latex code chunks:

$$a + bkc + d$$

Here is an example of importing mhchem Latex package and using it to produce the same equation. The mhchem Latex package is managed by miktex.



This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

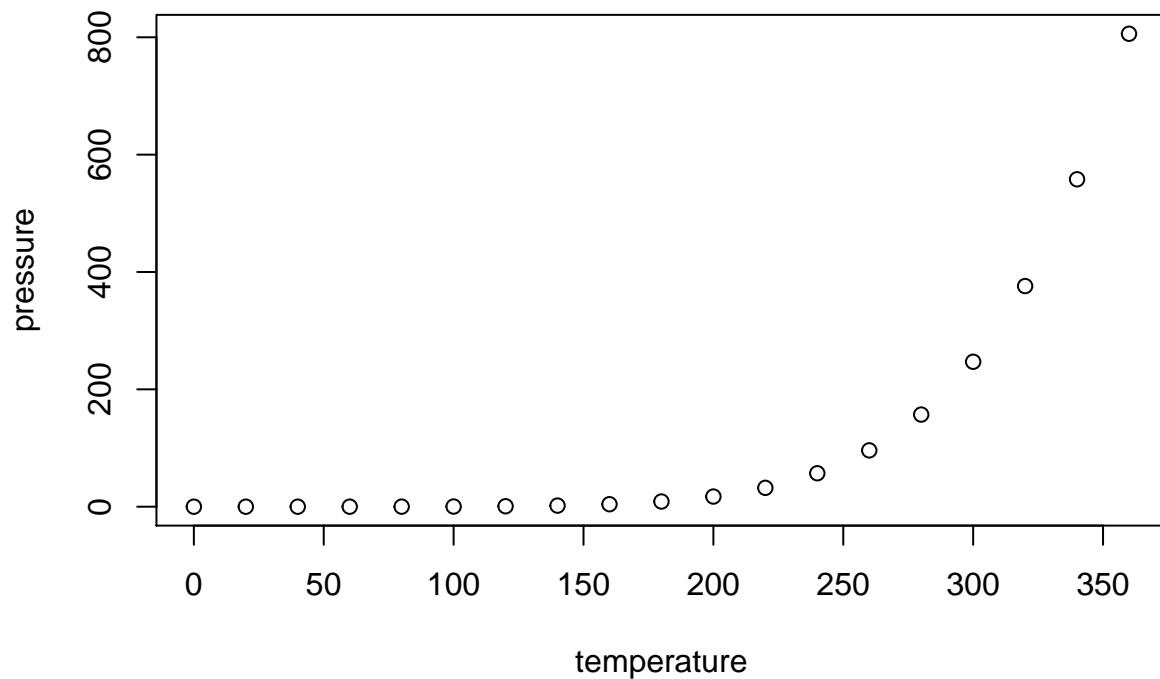
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   :  2.00
## 1st Qu.:12.0    1st Qu.: 26.00
##  Median:15.0    Median : 36.00
##   Mean  :15.4    Mean   : 42.98
## 3rd Qu.:19.0    3rd Qu.: 56.00
##   Max.  :25.0    Max.    :120.00
```

0.3 Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.