

## ChE 263 Final Exam Review/Practice

### Problem 1:

Using the data in the attached file, data.txt, do the following in two of the tools we learned this semester (Excel, Python and MathCAD):

1. Import the data
2. Report the number of data points, min, max and standard deviation of the y data
3. Fit the parameters  $A$  and  $E_a$  in the following equation to the data ( $R_g = 8.3145$ ):

$$y = Ae^{-\frac{E_a}{R_g T}}$$

4. Plot the data as points along with the fit equation as a line. Add an appropriate legend.

### Problem 2:

Solve the following series of equations in all three tools:

$$2x + 3y = 5$$

$$x - y + z = 1$$

$$-x - 3z = -2$$

### Problem 3:

Solve the following equations symbolically in two tools:

Where  $y = \sin(x) + x * e^{-t} + t^2$ , find:

$$\frac{dy}{dx}$$

$$\iint y \, dx \, dt$$

### Problem 4:

In Python, create a program that asks for a number as an input. Check the number to see if it equals 5. If it equals 5, end the program. If not, ask again until the input does equal 5 or a "large number" (you choose) of attempts have been made.

### Problem 5:

Using two tools, solve for x:

$$\ln(x) + e^x = \int_{y_1}^x \frac{rf^2}{k(rf - f)} df$$

Where  $y_1 = 1$ ,  $r = 5$ , and  $k = 0.1$