	Score	Out of:	Comments
1	5	5	The mass balances are correctly displayed and the code is well organized.
2	12	15	All elements are correctly organized. Wrap the timing code in a function to avoid repetition and improve readability. Find solutions to minimize error, especially when dealing with external functions or libraries. In the report, I wish the best function was identified using data from the table (the fastest function for the data set).

3	3	5	for this task you only had to change the matrix by adding the first order formula given by adding an extra column in the matrix.
			`k1 = 0.00584`
			
			`#Generating our coefficient matrix`
			`M = np.array([[Q_SH + k1*V_S,0,0,0,0], [0,Q_MH + k1*V_M,0,0,0], [-Q_SH, -Q_MH, Q_HE + k1*V_H, 0, 0], [0,0,-Q_HE, Q_EO + k1*V_E, 0], [0,0,0,-Q_EO,Q_OO + k1*V_E]])`
			`#print(M) #Uncomment to see the coefficient matrix`
			
			`#Solution Vector`
			`sol_vec = np.array([S_in, S_in_M, S_in_H,S_in_E, S_in_O])`
			
			`print(np.linalg.solve(M, sol_vec))`

4	3	3	I believe 4 graphs should have been made to represent PCB concentration's effect on varying bypass flow rate. The report mentions a correlation from the distribution, a diagram should have been included as it is unclear how the conclusion was reached. Moreover, in what way has "this analysis confirms the environmental impact of the proposed bypass"? please elaborate
5	6	10	explain how the PFR was implemented in task 5 (adding 1000 rows and columns) and please compare the 2 graphs displayed. Moreover, 4 lakes should be displayed not 2, as lakes Erie and Huron also depend on PCB concentration changes from bypass flow variations.

6	9	15	Code correctly solves the task, efficient. Could compare times for each function and each function's error to identify best method instead of relying only on the result and which one is typically least accurate.
			Like: `Needed to calculate the percentage error`
			`def percentage_error(a, b):`
			`    '''Returns the percentage error of the function`
			`    First argument is the observed value and second argument is the expected value'''`
			`    return np.abs((a-b)/(b))*100`
			
			`#Generating rows of the output table`
			`rows = [['Lower Riemann Sum', riemann_area_lower, end_time_riemann_lower, percentage_error(riemann_area_lower, actual_result)], ['Upper Riemann Sum', riemann_area_upper,`

			end_time_riemann_upper, percentage_error(riemann_area_upper, actual_result)], ['Middle Riemann Sum', riemann_area_middle, end_time_riemann_middle, percentage_error(riemann_area_middle, actual_result)], ['Trapezoid Rule', trapezoid_area, end_time_trapezoid, percentage_error(trapezoid_area, actual_result)], ['Simpson Rule', simpson_area, end_time_simpson, percentage_error(simpson_area, actual_result)]] df = pd.DataFrame(rows, columns = ['Solution method', 'Total discharge into lake superior (kg)', 'Time taken (s)', 'Percentage error from expected value'])
7	12	15	Correct use of monte carlo integration, could have again calculated percentage error or compared result to task 6 methods to compare and identify again the fittest or fastest methods and the most accurate ones
8	15	15	Code is correct and efficient. Graph displayed is the correct shape and has all its elements. Good job for the extra step of coding the Lagrange interpolation instead of using the scipy module.
9	8	10	Correct code, analysis and graph elements. Should have explained further figure 5's trend such as the greater peak at the 2 extremities of the x range.
10	4	5	Code correct and answers the task. Give educated conclusion on how the results can be used by the company for environmental purposes.

TIPS:

- Seek measurable comparison data like percentage error and time taken for example in task 6 to compare methods, not just the function's results and what method is stereotypically deemed more or less accurate;
- Try to implement more graphs and visuals whenever possible to support arguments made in the analysis;
- Present each task separately: it makes it easier to run everything;

TOPS:

- very organized code with comments guiding through
- correctly answers all tasks
- great analytical writing skills in the report, uses various tools to analyze data obtained