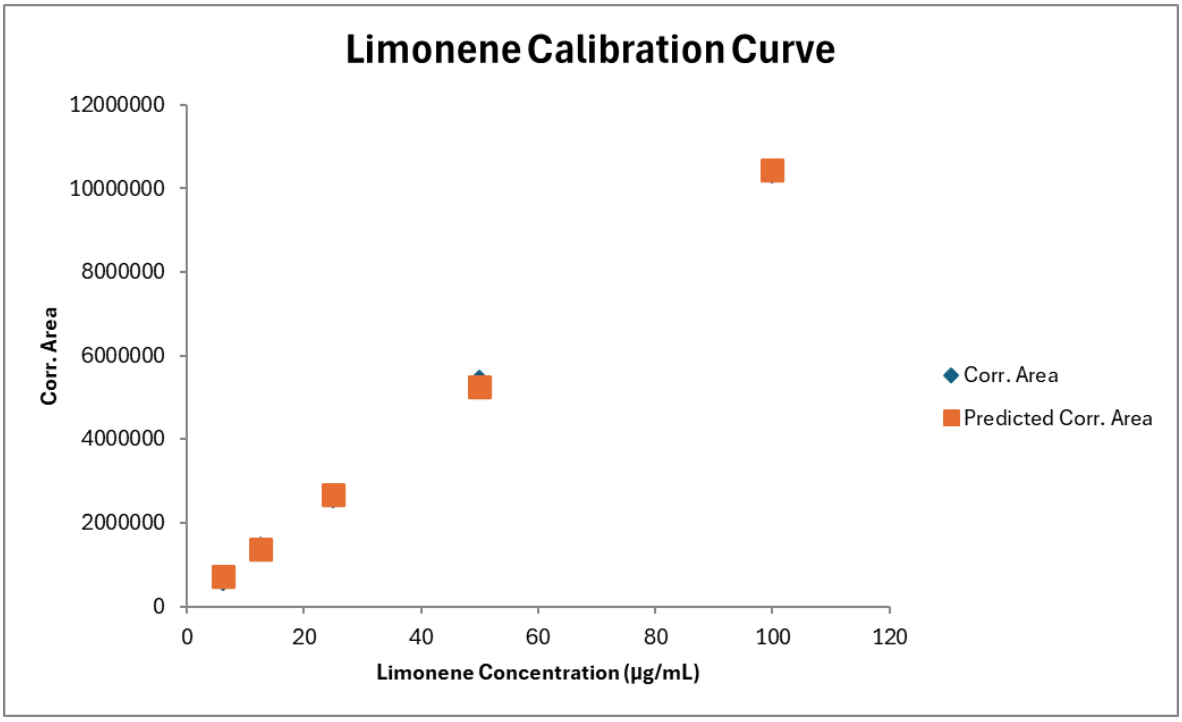
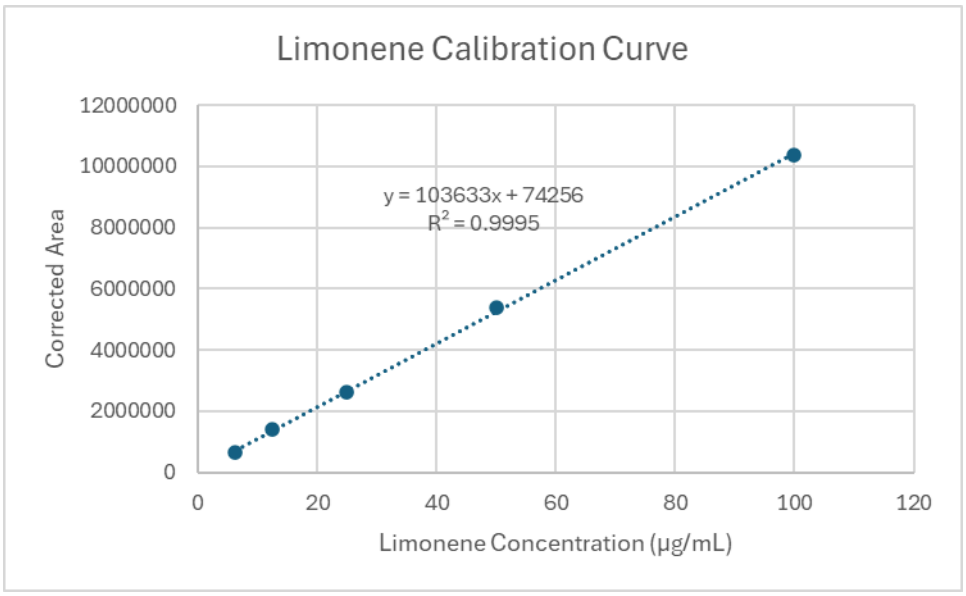
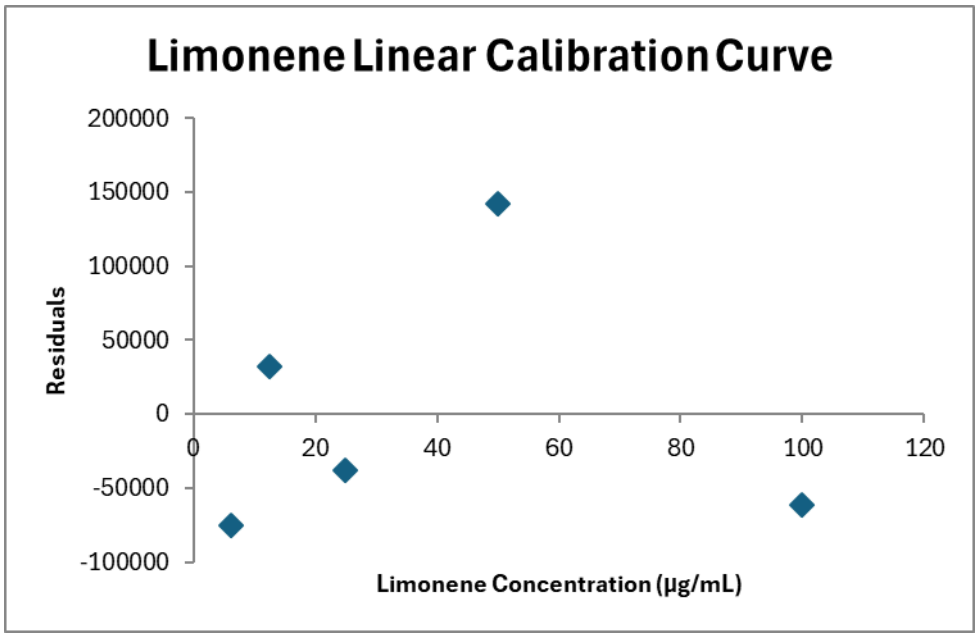
Lab 6: GC-MS Limonene

Questions

1.







2.

Sample	Corrected Area (1 replicate)	Diluted Conc. (µg/mL)	Undiluted Conc. (µg/mL)	Mass extracted (µg)	Mass of sample (g)	% wt/wt
Lemon	449594	3.62178	72.4356	362.178	0.1068	0.339118%
Grapefruit	628072	5.34399	106.880	534.399	0.0996	0.536545%
Std Dev Lemon	0	3.41886	68.3772	341.886	0	0.320118%
Std Dev Grapefruit	0	5.04457	100.8914	504.457	0	0.506483%

3. Using the y-intercept of the regression (74256.3) as the standard deviation of the blank, the limit of detection and limit of quantitation can be determined as 222769 and 742563 respectively. The signal from both the lemon and grapefruit samples fall within this range, indicating that the data is insufficient to make a quantitative determination of the weight percentage of limonene in either citrus fruits; however, it is sufficient to determine that there is limonene present. To obtain qualititative results, a new calibration curve should be created with standards that have lower concentrations, or the samples should be less diluted. A possible source of error resulting in lower than expected concentrations of is insufficient extraction of the limonene from the rind which could be fixed through smaller piece fragments, a longer time spent agitated in the methanol, or a better solvent.

Lab Notebook

Exp. No. 6	Experiment/Subject: GC-MS of Limonene in the Skin of Citrus	Date 2/27
Name	Lab Partner: Lukas Rosipko	Locker/Desk No.
		Course & Section No.

Lemon skin using Acculab L series → 0.1068 g grapefruit 0.0996 g using same
Micropipette set #19 FisherBrand 1 lite
Esko lab class flasks

Objective: Determine concentration of limonene in ~~fruit~~ lemon and grapefruit rinds

Procedure:

- Take a sample of rind from each fruit without any of the white flesh, about 0.1 g.
- Shake in methanol to ~~ext~~ create a solution with the limonene extracted from the rind
- Create a set of standards of concentrations 100 µg/mL, 50 µg/mL, 25 µg/mL, 12.5 µg/mL, and 6.25 µg/mL using serial dilution from a 97% purity limonene standard diluted to 1000 µg/mL
- Use GC-MS to obtain a spectrum for each sample and standard

• Used ports 18-25 for our samples

18 Blank
19 6.25 µg/mL
20 12.5 µg/mL
21 25 µg/mL
22 50 µg/mL
23 100 µg/mL
24 Lemon Sample
25 Grapefruit Sample

Signature [signature] Date | Witness/TA [signature] Date

THE HAYDEN-McNEIL STUDENT LAB NOTEBOOK
Note: Place fold-over back cover under copy sheet before writing.