Problem set #6

Name: _____

Precalculus

Herbert H. Lehman High School

March 30, 2022

Be sure to... Do all work in your notebook. If you don't complete work in class, finish at home. Submit on Google Classroom.

1. For the matrices below, **be sure to** (i) find the determinant, showing all work, then (ii) check your answer using the **determinant calculator** on Google Classroom. If you got the wrong answer, double check your work and write a sentence explaining what you did wrong:

   (a) $A = \begin{bmatrix} 1 & 4 & -2 \\ 3 & 2 & 0 \\ -1 & 4 & 3 \end{bmatrix}$

   (b) $B = \begin{bmatrix} 2 & 6 & 5 & 2 \\ 2 & 7 & 3 & 6 \\ 1 & 5 & 0 & 1 \\ 3 & 7 & 0 & 7 \end{bmatrix}$

2. Ashley owns a factory that makes trail mix. Her factory makes three kinds of trail mix: *bulk*, *standard*, and *fancy*. The trail mix uses three ingredients–raisins, peanuts, and chocolate chips. The table below provides information about how much of each ingredient is used for each variety:

	Raisins kg/batch	Peanuts kg/batch	Chocolate kg/batch
Bulk	7	6	2
Standard	6	4	5
Fancy	2	5	8
Storage (kg)	380	500	620

   As seen in the table, the factor has room to store in the following amounts: 380 kilograms of raisins, 500 kilograms of peanuts and 620 kilograms of chocolate chips. Ashley asks you to help determine how much she should make of each mix so that no ingredients are left over at the end of the day.

   Be sure to...

   a. write a system of equations that goes along with this problem

   b. Use your linear algebra skills to determine how much of each mix Ashley should make. Feel free to use the **determinant and adjugate calculators** on Google Classroom!