ALGEBRA 2 HONORS
PROBLEM SET #8

DUE DATE: SEPTEMBER 25, 2023

Question 1. Determine whether the points $(5, 9), (-3, 3)$ and $(1, 6)$ are collinear.

Question 2. A line passing through the points $(2a + 4, 3a^2)$ and $(3a + 4, 5a^2)$ has slope $a + 3$. What is the value of a?

Question 3 (§3.2 #43)**.** Suppose you have a part time job delivering packages. Your employer pays you a flat rate of \$9.50 per hour. You discover that a competitor pays \$2 per hour plus \$3 per delivery.

(a) How can you write a system of equations to model the situation?
(b) How many deliveries would the competitor's employees have to make in 4 hours to earn the same pay you would earn in a 4 hour shift?

Question 4 (§3.6 #24, 25, 27, 29)**.** Solve each of the system of equations using any method.

(#24) $\begin{cases} x + 3y = 5 \\ x + 4y = 6 \end{cases}$

(#25) $\begin{cases} p - 3q = -1 \\ -5p + 16q = 5 \end{cases}$

(#27) $\begin{cases} x + 3y = 22 \\ 2x - y = 2 \end{cases}$

(#29) $\begin{cases} x + y = 5 \\ -2x + 4y = 8 \end{cases}$

Question 5. Compute the **determinants** of the following matrices:

(a) $\begin{bmatrix} 2023 \end{bmatrix}$

(b) $\begin{bmatrix} 1 & -2 \\ 3 & 4 \end{bmatrix}$

(c) $\begin{bmatrix} -1 & \frac{1}{2} \\ 0 & 4 \end{bmatrix}$

(d) $\begin{bmatrix} 0 & 1 \\ 20 & 23 \end{bmatrix}$

(e) $\begin{bmatrix} 1 & 2023 & 3 \\ 0 & -1 & 10 \\ 0 & 0 & 1 \end{bmatrix}$