> Please show **all** your work and circle your answer! Please read the questions carefully.
> You can use the back of this quiz to write answers, but clearly indicate which problem
> you are solving. You have 15 minutes for this quiz.

Name:_____

1. (3pts) Compute the determinant of the following matrices:

$$A = \begin{pmatrix} 2 & -1 \\ 1 & 5 \end{pmatrix}, \quad B = \begin{pmatrix} 2 & 1 & 3 \\ 0 & 0 & 2 \\ 0 & -1 & \pi \end{pmatrix}, \quad C = \begin{pmatrix} 3 & 0 & 0 & 5 & 0 \\ 9 & 1 & 7 & 5 & 0 \\ 1 & 4 & 7 & 5 & 2 \\ 1 & 0 & 0 & 3 & 0 \\ 2 & 1 & 0 & 6 & 0 \end{pmatrix}$$

2. (2 pts) Solve the linear system by using Cramer's rule:

$$\begin{cases} -5x + 2y = 9 \\ 3x - y = -4 \end{cases}$$

3. (3 pts) What is the volume of the unit ball[1] when it is acted on by the linear transformation that acts on the standard basis vectors in the following way: $\vec{e}_1 \mapsto \vec{e}_3$, $\vec{e}_2 \mapsto -1\vec{e}_2 + 17\vec{e}_3$, $\vec{e}_3 \mapsto -3\vec{e}_1 - 3\vec{e}_2 + 9\vec{e}_3$

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[1] the unit ball in has volume $(4/3)\pi$