Printed Name _____   Signature _____

Show your work and clearly label your answers on this quiz.

No scrap paper or notes are allowed, but you may use a scientific or accounting calculator (no phones or computers). Use 6 digits of precision throughout your calculations (and answers), although fractions and roots will likely make for more intelligible answers.

This quiz is scored out of 85 points. (There are 100 points possible.)

You have 30 minutes to complete the quiz.

To get credit on a problem, you *must* give a clear, well-written explanation, justifying each step.

Consider

$$A = \begin{bmatrix} a & 1 & 0 \\ 1 & a+1 & -1 \\ 0 & -1 & a \end{bmatrix} \text{ and } B = \begin{bmatrix} 0 & 2 & b \\ 1 & 0 & 4 \\ 0 & 5 & 3 \end{bmatrix}.$$

Problem 1   (10x4 pts) Compute

(a) $det(3A - 2B)$.

(b) $det(A^2 B^3)$ if $a = 3$ and $b = 2$.

(c) a if $det(A) = 8$.

(d) b if $det(B) = 0$.

Work for Problem 2

Problem 2 (10x5 pts) Consider

$$A\vec{x} = b$$

where A is from Problem 1 with $a = 2$, and $b = \begin{pmatrix} 1 \\ 2 \\ 4 \end{pmatrix}$.

(a) Compute $det(A)$.

(b) *Using Cramer's Rule*, solve $A\vec{x} = b$.

(c) *Using Cramer's Rule*, compute A^{-1}.

(d) *Using elimination*, solve $A\vec{x} = b$.

(e) *Using elimination*, compute A^{-1}.

Problem 3 (10 pts) Compute the area of the parallelogram generated by the vectors

$$\begin{pmatrix} 2 \\ 2 \\ 1 \end{pmatrix} \text{ and } \begin{pmatrix} -3 \\ 0 \\ 4 \end{pmatrix}.$$