

Name: _____

- Put your name in the “ _____ ” above.
- Answer Question 1.
- Proofs are graded for correctness, clarity, rigor, neatness.
- Good luck!

1. Let

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} 0 & 0 & 2 \\ -1 & 0 & 6 \\ -6 & -7 & -7 \end{bmatrix}.$$

Find all solutions to the matrix equation

$$(A + B)\mathbf{x} = \mathbf{0}.$$

2. Let

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} 0 & 0 & 2 \\ -1 & 0 & 6 \\ -6 & -7 & -7 \end{bmatrix}.$$

Find all solutions to the matrix equation

$$A\mathbf{x} = -B\mathbf{x}.$$