

Directions: Show **ALL** work for credit; Give **EXACT** answers when possible; **SIMPLIFY** your answers;

1. The system of equations below can be written as $AX = B$ in matrix form. Row reduce the augmented matrix $[A \mid B]$ to reduced row echelon form (7 points). From this rref matrix determine if the system has 0, 1 or ∞ many solutions (3 points).

$$w + x + y + z = 5$$

$$w - x + 3y - 3z = 7$$

$$w + 3x - y + 5z = 3$$

$$w - 3x + 5y - 7z = 10$$