Question 1 *The linear system associated to the augmented matrix below is consistent.*

$$\left[\begin{array}{ccc|c} a & b & c & 0 \\ d & e & f & 0 \\ g & h & i & 0 \end{array}\right]$$

Multiple Choice:

(a) *True* ✓

(b) *False*

Question 2 *Given the RREF augmented matrix below, write the solution to the associated system in parametric vector form.*

$$\left[\begin{array}{ccc|c} 1 & 0 & 9 & -8 \\ 0 & 1 & -4 & 5 \end{array}\right]$$

Answer: $\mathbf{x} = \begin{bmatrix} \boxed{-8} \\ \boxed{5} \\ \boxed{0} \end{bmatrix} + x_3 \begin{bmatrix} \boxed{-9} \\ \boxed{4} \\ \boxed{1} \end{bmatrix}$

Question 3 *A system of linear equations is called* **homogeneous** *if it can be written in the form ...*

Multiple Choice:

(a) $A\mathbf{x} = \mathbf{0}$ ✓

(b) $A\mathbf{x}=\mathbf{b}$

Question 4 *You are given a homogeneous system with no free variables. How many solutions does it have?*

Multiple Choice:

(a) *none*

(b) *one* ✓

(c) *infinitely many*

(d) *not enough information to know*

Question 5 *Geometrically, the parametric vector form of a solution* $\mathbf{x} = \mathbf{p} + t\mathbf{v}$ *represents:*

Multiple Choice:

(a) *a line through the origin parallel to* $\mathbf{p}$.

(b) *a line through the origin parallel to* $\mathbf{v}$.

(c) *a line through* $\mathbf{v}$ *parallel to* $\mathbf{p}$.

(d) *a line through* $\mathbf{p}$ *parallel to* $\mathbf{v}$. ✓

(e) *a plane through* $\mathbf{p}$ *and* $\mathbf{v}$.
