Name: _____

Quiz 9

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. 4.7 #TF *(3 marks)* Determine a vector equation of the line of intersection of the given planes.

$x + 3y - z = 5$ and $2x - 5y + z = 7$

Question 2. §3.4 #TF *(2 marks)* Determine whether the statement is true or false, and justify your answer.
The general solution of the nonhomogeneous linear system $Ax = b$ can be obtained by adding b to the general solution of the homogeneous linear system $Ax = 0$.

Question 3. §3.5 #TF *(5 marks)* Prove: If $\vec{a}, \vec{b}, \vec{c}$ and $\vec{d}$ lie in the same plane, then

$$(\vec{a} \times \vec{b}) \times (\vec{c} \times \vec{d}) = \vec{0}$$

Question 4. *(3 marks)* If A and B are 4×4 matrices, $\det(A) \neq 0$ and $\det(2BA + B\text{adj}(A)A^2) = 0$ then B singular.

Question 5. *(2 marks)* Prove or disprove: If $\det(A^2) = \det(A)$ then $A^2 = A$.