## Name: \_\_\_\_\_\_ Math 362 Linear Algebra – Crawford

Books and notes (in any form) are <u>not</u> are allowed. You may use a calculator – but you must clearly show your set-up for the problem. Please also indicate when you use the matrix functions on the calculator. Show all other work for credit. *Good luck!* [Note: Each quiz score will be scaled to 15 points after grading.]

**1.** (5 pts) Given the following system of equations, use Cramer's Rule to solve for  $x_3$  only.

$2x_1$	+	$x_2$	+	$x_3$	=	4
$-x_1$	+			$2x_3$	=	2
$3x_1$	+	$x_2$	+	$3x_3$	=	-2

**2.** (3 pts) Given the following determinant:

a	b	c	
d	e	f = 4,	find the following determinant.
g	h	i	

d	e	f
5a	5b	5c
g	h	i

**3.** (4 pts) Let U be a square matrix such that  $U^T U = I$ . Show that det  $U = \pm 1$ .

4. (3 pts) Determine if the following statements are True or False. [No explanation necessary.]

(a). det(AB) = det(A) det(B) for all matrices A and B for which the product AB is defined

(b). Suppose A is a square matrix such that det  $A^3 = 0$ , then A is not invertible.