

Name: \_\_\_\_\_

Section: \_\_\_\_\_

1. Find all solutions of the following linear system:

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

$$x_1 - x_2 = -2$$

The first equation is  $-2$  times the second equation. Thus  $x_1, x_2$  solves the system if and only if it solves the second equation. For any number  $t$ , the second equation is solved by  $x_1 = t, x_2 = 2 + t$ .

2. For what numbers  $a, b, c$  is the following matrix in row echelon form (REF) or reduced row echelon form (RREF)?

$$\begin{bmatrix} 0 & a & 1 & b & 0 \\ 0 & 0 & 0 & c & 0 \\ 0 & 0 & 0 & 0 & a \end{bmatrix}$$

REF:  $a = 0$  and any  $b, c$ ; or  $a, c \neq 0$  and any  $b$ .

RREF:  $a, c = 1$  and  $b = 0$ ; or  $a = 0, b = 0, c = 1$ ; or  $a, c = 0$  and any  $b$ .