

## Homework 1: Systems of Linear Equations (Part 1)

1. §1.1, #1, 9(a).
2. §1.2, #2, 3(a), 5.
3. Row reduce matrix  $A$  to reduced row echelon form. List the pivot columns of  $A$ .

$$A = \begin{bmatrix} 3 & 5 & 7 & 9 & 0 \\ 2 & 6 & 10 & 14 & 0 \\ 5 & 7 & 9 & 1 & 0 \end{bmatrix}$$

4. (a) Find the equation  $y = ax + b$  of the line passing through  $(2, 3)$  and  $(5, 8)$ . (Your answer should be an equation of the form  $y = ax + b$ , for some constants  $a$  and  $b$ .)  
(b) Find the equation  $y = ax^2 + bx + c$  of the parabola passing through the points  $(-2, -6)$ ,  $(1, 6)$ , and  $(3, 4)$ . (Your answer should be an equation of the form  $y = ax^2 + bx + c$ , for some constants  $a$ ,  $b$ , and  $c$ .)

Hint: In part (b), substituting the  $x$ - and  $y$ -coordinates of a point into the equation  $y = ax^2 + bx + c$  will produce a linear equation in  $a$ ,  $b$ , and  $c$ . Do this for the three given points to get three linear equations. Then solve the system of linear equations. A similar method works for part (a).