

HOMEWORK ASSIGNMENT # 1
Due Wednesday, August 29

1. Apostol §4.20, p. 158, Exercise # 1.
2. Apostol §4.20, p. 158, Exercise # 2.
3. Apostol §4.20, p. 158, Exercise # 7.
4. Apostol §1.4, p. 31, Exercise # 5.
5. Apostol §1.4, p. 31, Exercise # 6.
6. Apostol §1.4, p. 31, Exercise # 7.
7. Apostol §1.8, p. 36, Exercise # 1.
8. Apostol §1.8, p. 36, Exercise # 3.
9. Apostol §1.8, p. 36, Exercise # 4.
10. Find an equation of the form $y = ax^2 + bx + c$ for the unique parabola passing through the points $(1, 1)$, $(2, 2)$, and $(-1, 0)$.
11. Find the reduced row echelon form and the rank of the following matrices:

(a)

$$A = \begin{bmatrix} 3 & 1 & 1 & 1 \\ 1 & 2 & -3 & 1 \\ 2 & 1 & 0 & 3 \end{bmatrix}$$

(b)

$$B = \begin{bmatrix} 4 & 3 & 7 & 4 \\ -1 & 3 & 2 & -1 \\ 1 & 1 & 2 & 0 \end{bmatrix}$$

12. Consider the system of linear equations

$$x - 2y + az = 2$$

$$x + y + z = 0$$

$$3y + z = 2$$

- (a) For which values of a , if any, does this system have a unique solution?
- (b) For which values of a , if any, does this system have no solution?
- (c) For which values of a , if any, does this system have infinitely many solutions?

13. Consider the system of linear equations

$$x + 2y + z = b$$

$$2x + y + 2z = 2$$

$$3x + 3y + az = 3$$

- (a) For which values of a and b , if any, does this system have a unique solution?
- (b) For which values of a and b , if any, does this system have no solution?
- (c) For which values of a and b , if any, does this system have infinitely many solutions?