18.06 Problem Set 2

Due at 4pm on Wednesday, September 21 in 2-106

Please PRINT your name and recitation information on your homework

1. Section 2.5, Problem 25

2. Section 2.5, Problem 30

3. Section 2.5, Problem 35

4. Section 2.6, Problem 13

5. Section 2.6, Problem 16

6. Section 2.6, Problem 19

7. Section 2.6, Problem 28

8, Section 2.7, Problem 10

9. Section 2.7, Problem 12

10. Section 2.7, Problem 16

11. Section 2.7, Problem 19

12. Let A_α be the 2 by 2 matrix such that $A_\alpha v$ equals the vector v rotated by the angle α in the counterclockwise direction for every 2-dimensional vector v. What is $A_\alpha A_\beta$? Show that the set of all A_α, where $0 \leq \alpha < 2\pi$, forms a group. (For the definition of a group of matrices, refer to Problem 37 in Section 2.7.)

13. Let A and B be symmetric n by n matrices. Show that AB is symmetric if and only if $AB = BA$.