

**Homework 1, due September 5**

0. If you haven't already done so, contribute a one-paragraph "autobiography" to the "Let's Get Acquainted" Discussion Forum in eCampus.
- 1–7. Bowen & Wang, pp. 10–11 (Chap. 0).  
(Do matrix problems by the the methods of your choice, not necessarily by the determinant methods in the text.)
8. [*Bowen & Wang, p. 45*] Let  $\mathcal{V}$  and  $\mathcal{U}$  be vector spaces. Show that the set  $\mathcal{V} \times \mathcal{U}$  is a vector space with the definitions

$$(\vec{u}, \vec{x}) + (\vec{v}, \vec{y}) = (\vec{u} + \vec{v}, \vec{x} + \vec{y})$$

and

$$\lambda(\vec{u}, \vec{x}) = (\lambda\vec{u}, \lambda\vec{x}),$$

where  $\vec{u}, \vec{v} \in \mathcal{V}$ ;  $\vec{x}, \vec{y} \in \mathcal{U}$ ; and  $\lambda \in \mathcal{F}$ .