Q1. F3×3

[]

F is a matrix of unknown. Given [] → [], for i = 1,2,…n, solve for F (i.e. write down linear system Ax=0 to solve F , where x is a vector of unknowns).

A1.

**Typical mistake:** assume / Typos

**Q2.** Given the following moving average model:

You are to estimate given u and y for t = 1,…,6. Write down the least squares system of equation Ax = b that solves .

A2.

**Typical mistake:** assume .

**Q3.** The 3×1 vectors and are related by R, a 3×3 rotation matrix.

Given a set of 3d points and for i = 1,2,,n, solve for R by writing down the least squares system of equation Ax = b or Ax=0 (you don’t have to impose the orthogonal constraint of R).

A3.

1. In the form of 3 separate subsystems:

Let , , then we have

1. In the form of one system:

**Typical mistake:**