Problem 1.12.b modification:

Suppose $x = (0, 0, 0, 1, 0, 0)$ which is e_4 in the context of 6-vectors and suppose $a = (a_1, a_2, \cdots, a_{10})$, a 10-vector. Find $c = x * a$.

1. Determine a matrix A such that for any $v \in \mathbb{R}^2$, Av is the reflection of v around the line $y = -x$.

2. This is a modification of problem 7.14 in the text, which you should read first.

The vector is given as $g = (0.1, 0.4, 0.5, 0.2)$.

The vector r gives rainfall amounts per day in inches.

(So, if you were given $r = (1, 0, 0, 1)$, it would indicate that there was one inch of rain on day 1, no rain for the next two days, and one inch of rain on day 4.)

The vector $h = g * r$ indicates river height above normal in inches per day, starting with the same day as r.

a) Suppose $r = (1, 0, 0, 0, 0, 0)$. Compute $h = g * r$.

b) Suppose $r = (0, 1, 0, 0, 0, 0)$. Compute $h = g * r$.

c) Suppose $r = (0, 2, 0, 0, 0, 0)$. Compute $h = g * r$.

d) Suppose $r = (1, 1, 0, 0, 0, 0)$. Compute $h = g * r$.

e) Suppose $r = (1, 2, 0, 0, 0, 0)$. Compute $h = g * r$.

f) Suppose $r = (0, 0, 0, 0, 0, 1)$. Compute $h = g * r$.

g) Suppose $r = (1, 0, 0, 0, 0, 1)$. Compute $h = g * r$.

h) Now finish problem 7.14.