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10.1 Review Questions

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## 10.1 Review Questions

### 10.1.R1

1/1 point (graded)

You are analyzing a dataset where each observation is an age, height, length, and width of a particular turtle. You want to know if the data can be well described by fewer than four dimensions (maybe for plotting), so you decide to do Principal Component Analysis. Which of the following is most likely to be the loadings of the first Principal Component?

☐ (1, 1, 1, 1)

☒ (.5, .5, .5, .5)

☐ (.71, -.71, 0, 0)

☐ (1, -1, -1, -1)



#### Explanation

We know that options 1 and 4 cannot be right because the sum of the squared loadings exceeds 1. The second option is most likely correct because we expect all four variables to be positively correlated with each-other.

Note that it is fairly common for the loadings of the first principal component to all have the same sign. In such a case, the principal component is often referred to as a size component.

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**i** Answers are displayed within the problem