MATH 342 SECTION 33650
WRITTEN HOMEWORK 6
DUE MAY 14, 2018.

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Required textbook problems (hand these in):

(1) §6.2: 1, 4, 12, 14, 17, 22.
(2) §6.3: 4, 12, 14.
(3) §6.4: 3, 4, 10, 22.

Suggested practice (don't hand these in):

- Please read and make sure you can do the practice problems in Sections 6.2, 6.3, and 6.4.
- Use Exercises 6.2.23, 6.2.24, 6.3.21, 6.3.22, 6.4.17(a,b), 6.4.18(a,b) for review.
- If you have some experience writing proofs, try Exercises 6.2.28, 6.2.29, 6.2.33.
- If you had trouble or got help with any of the assigned problems, solve another, similar problem (or two).

Bonus points. Sage, as usual. For this week:

(1) Work through the blog post "Dot products and orthogonality".
(2) Use Sage to check your answers to 6.2.2, 6.4.3, 6.4.4, 6.4.10.
(3) Optional: write a function in Sage which computes the orthogonal projection of $\vec{v}$ to $\mathrm{Span}(\vec{w})$. (Your function should take two inputs, $\vec{v}$ and $\vec{w}$.) Test your function in some examples. Only slightly harder: write a function which computes the orthogonal projection of $\vec{v}$ onto $\mathrm{Span}(\vec{w}_1, \dots, \vec{w}_n)$. (In the second case, start by applying Sage's Gram-Schmidt to $\vec{w}_1, \dots, \vec{w}_n$.)

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