

**MATH 281 (PHILLIPS), FALL 2020: EXTRA  
PRACTICE RELATED TO WRITTEN HOMEWORK 2**

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This homework assignment is optional. If turned in, it is due Wednesday 14 Oct. 2020 at 10:00 pm, to be uploaded as a pdf file (or one of a few other allowed file types) on the University of Oregon Canvas site.

General instructions: show work in all problems, and be very careful to use fully correct notation. Incorrect notation will lose credit on exams (grading is based on what you write, not what you meant), and the written homework assignments are your chance to have me tell you whether your notation is correct.

Files turned in must have good enough resolution that I can read them easily.

Apart from the extension (such as “.pdf”), your file name should contain only numbers, capital and lowercase letters, and underscores. In particular, **no** spaces or parentheses. File names **need not** contain your name or student ID (Canvas adds these automatically) or the course number. A name like “HW2.Extra.pdf” (or even “HW2E.pdf”) is perfectly sufficient.

Write your name on all pages.

**Problem 1.** Find the volume of the parallelepiped spanned by

$$\mathbf{u} = \langle 1, -3, -6 \rangle, \quad \mathbf{v} = \langle -1, -7, -2 \rangle, \quad \text{and} \quad \mathbf{w} = \langle 2, -4, -5 \rangle.$$

**Problem 2.** Find all unit vectors orthogonal to both

$$\mathbf{v} = \langle 2, -2, 3 \rangle \quad \text{and} \quad \mathbf{w} = \langle -3, -1, -4 \rangle.$$

**Problem 3.** Find all vectors  $\mathbf{v}$  such that

$$\langle 3, -2, -1 \rangle \times \mathbf{v} = \langle 2, -1, 8 \rangle.$$