Exam I Hints and Answers
Math 126 B Autumn 2014

Version 1: In Problem 1, $\mathbf{a} = \langle 2, -5, 7\rangle$:

1. (a) $\text{proj}_{\mathbf{b}}\mathbf{a} = \langle -\frac{3}{10}, 0, \frac{1}{10}\rangle$
   (b) $\cos\theta = -\frac{1}{\sqrt{780}}$
   (c) $\mathbf{v} = \frac{4}{\sqrt{779}}\langle 5, 23, 15\rangle$
2. $\sqrt{74}$
3. (a) $\left(3, -\frac{\pi}{3}\right)$; (b) $\left(-3, \frac{2\pi}{3}\right)$
4. $-5x + 15y + 7z = 15$
5. $L = \frac{1}{4}e^{20} + \frac{19}{4}$
6. $x = 2t, y = 3 - 8t, z = -4 + 3t$

Version 2: In Problem 1, $\mathbf{a} = \langle 2, -7, 3\rangle$:

1. (a) $\text{proj}_{\mathbf{b}}\mathbf{a} = \langle \frac{2}{5}, 0, -\frac{1}{5}\rangle$
   (b) $\cos\theta = \frac{1}{\sqrt{310}}$
   (c) $\mathbf{v} = \frac{3}{\sqrt{1236}}\langle 14, 16, 28\rangle$
2. $\sqrt{93}$
3. (a) $\left(3, \frac{5\pi}{6}\right)$; (b) $\left(-3, -\frac{\pi}{6}\right)$
4. $-2x + 8y - 9z = 8$
5. $L = \frac{1}{4}e^{12} + \frac{11}{4}$
6. $x = 2t, y = 5 - 8t, z = -2 + t$