Answers for March 13, 2017 Exam:

Q1 (a): $\frac{\sqrt{2}}{2}\pi$ (b): Curvature is $\frac{1}{\sqrt{2}}$ and torsion is 0 (c): C is the ellipse of intersection of the cylinder $\frac{(x-3)^2}{2} + \frac{(y-2)^2}{1} = 1$ and the plane $z = 6 - y$.

Q2 (a): Limit does not exist. (b): 0.

Q3 0

Q4 (a): $\hat{\mathbf{u}} = \langle 1, 0\rangle$ or $\hat{\mathbf{u}} = \langle 0, 1\rangle$. (b): $\frac{-2}{5}$

Q5 The closest points are $(0, \frac{-3}{\sqrt{13}}, \frac{2}{\sqrt{13}})$ and $(0, \frac{3}{\sqrt{13}}, \frac{2}{\sqrt{13}})$ with distance 1 and the farthest points are $(\sqrt{13}, \frac{-2}{\sqrt{13}}, \frac{-3}{\sqrt{13}})$ and $(-\sqrt{13}, \frac{2}{\sqrt{13}}, \frac{3}{\sqrt{13}})$ with distance $\sqrt{14}$.