

Exam II Answers
Math 126 E & F Spring 2017

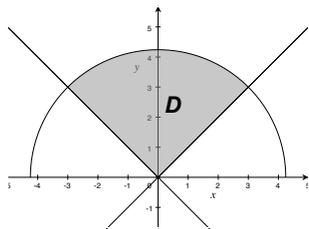
Version 1: The function in #1 begins $f(x, y) = x^3 - 15x + \dots$

- saddle points at $(-\sqrt{5}, 1)$ and $(\sqrt{5}, -3)$
- (a) $\mathbf{a}(t) = \langle 0, -3, 5 \rangle$, $\mathbf{v}(t) = \langle -2, -3t + 1, 5t + 3 \rangle$, $\mathbf{r}(t) = \langle -2t, -\frac{3}{2}t^2 + t, \frac{5}{2}t^2 + 3t \rangle$
(b) HINT: $\mathbf{B}(t)$ is a unit vector with the same direction as $\mathbf{r}'(t) \times \mathbf{r}''(t)$.
 $\mathbf{B}(t) = \left\langle \frac{7}{\sqrt{83}}, \frac{5}{\sqrt{83}}, \frac{3}{\sqrt{83}} \right\rangle$
(c) $7x + 5y + 3z = 0$

3. $f(1.05, 1.03) \approx 0.08$

4. $V = \int_0^5 \int_0^{2-\frac{2}{5}x} 10 - 2x - 5y \, dy \, dx = \int_0^2 \int_0^{5-\frac{5}{2}y} 10 - 2x - 5y \, dx \, dy$

5. (a)



- (b) 36