Exam II Hints and Answers
Math 126 B Autumn 2014

Version 1: In Problem 1, $f(x,y) = (4y^2 - x^2)e^{-x^2-y^2}$:

1. $z = -\dfrac{8}{e^2}(x-1) + \dfrac{2}{e^2}(y-1) + \dfrac{3}{e^2}$
2. $\mathbf{r}(t) = \langle t+1, 1, -4\cos\left(\frac{t}{2}\right) - t + 4\rangle$
3. absolute max: 9; absolute min: $\frac{17}{3}$
4. $\displaystyle\iint_D f(x,y)\,dA = \int_1^2 \int_1^x f(x,y)\,dy\,dx + \int_2^4 \int_{x/2}^2 f(x,y)\,dy\,dx$
5. $9\sqrt{3} - 3\pi$

Version 2: In Problem 1, $f(x,y) = (6y^2 - x^2)e^{-x^2-y^2}$:

1. $z = -\dfrac{12}{e^2}(x-1) + \dfrac{2}{e^2}(y-1) + \dfrac{5}{e^2}$
2. $\mathbf{r}(t) = \langle 1, t+1, -9\cos\left(\frac{t}{3}\right) - t + 9\rangle$
3. absolute max: 12; absolute min: $\frac{26}{3}$
4. $\displaystyle\iint_D f(x,y)\,dA = \int_1^2 \int_1^x f(x,y)\,dy\,dx + \int_2^4 \int_{x/2}^2 f(x,y)\,dy\,dx$
5. $6\sqrt{3} - 2\pi$