Name: ID #: Section #:

1) [**3pts**] Use Lagrange multiplier to find the absolute maximum and minimum values of $f(x, y) = 4x + 6y$ on the circle $x^2 + y^2 = 13$.

Solution:

2) [**4pts**] Calculate the iterated integrals

(a) $\displaystyle\int_0^1 \int_1^2 \frac{xe^x}{y}\, dydx =$

(b) $\displaystyle\int_0^1 \int_{x^2}^x (1 + 2y) dydx =$

3) [**3pts**] Solve ***one*** of the following questions

(a) Find the average value of $f(x, y) = x \sin y$ on the region D enclosed by the curve $y = x^2$ and the lines $y = 0,\ x = 1$.

(b) Evaluate (change the order of the integration)

$$\int_0^1 \int_{3y}^3 e^{x^2} dxdy$$

Solution:

Name: ID #: Section #:

1) [**4pts**] Calculate the following integrals

(a) $\int_0^1 \int_0^1 (u-v)^5 du dv =$

(b) $\iint_D x^3 dA,\ D = \{(x,y) | 1 \le x \le e,\ 0 \le y \le \ln x\}$

2) [**3pts**] Solve ***one*** of the following questions

(a) Find the average value of $f(x,y) = e^y \sqrt{x+e^y}$ over $R = [0,4] \times [0,1]$.

(b) Evaluate (change the order of the integration)

$$\int_0^8 \int_{\sqrt[3]{y}}^2 e^{x^4} dx dy$$

Solution:

3) [**3pts**] Use Lagrange multiplier to find the absolute maximum and minimum values of $f(x,y) = 4x + 6y$ on the circle $x^2 + y^2 = 13$.

Solution: