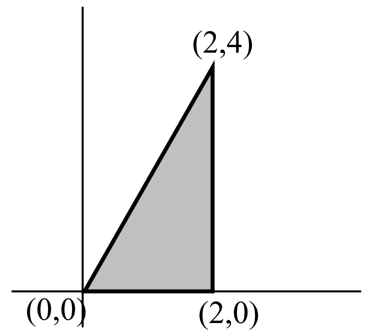
SI Session: March 30th & April 1st, 2009
Mondays: 4:50 PM – 6:20 PM
Tuesdays: 1:30 PM – 3:00 PM
Wednesdays: 4:50 PM – 6:20 PM
Room 1245 SNAD

Prof. Stockton : Calculus III
Spring 2009
SI Leader : Neil Jody

[1] Find the absolute maximum and minimum values of the function $f(x,y) = x^2y - x^2 - y + 1$ on the triangular region shown below:



[2] Evaluate the iterated integrals.

(a) $\int_0^1 \int_0^\pi e^x \sin y \, dydx$

(b) $\int_0^{\pi/2} \int_1^e \frac{\sin y}{x} dxdy$

[3] Express $\int_1^4 \int_1^{\sqrt{x}} xe^y \, dy dx$ as an iterated integral with the reverse order of integration.

[4] Reverse the order of integration for $\int_0^{\ln 2} \int_{e^y}^{2} f(x,y) dx dy$.

[5] Set up a double integral and evaluate.

(a) $\iint_D \left(4 - x^2\right) dA$

D: region bounded by $y = 0$, $x = 0$, and $y = 4 - x^2$

(b) $\iint_D \frac{y}{1 + x^2}$

D: region bounded by $y = 0$, $y = \sqrt{x}$ and $x = 4$

(c) $\int_0^1 \int_{y/2}^{1/2} e^{-x^2} \, dx dy$

(d) $\int_0^{\ln 10} \int_{e^x}^{10} \frac{1}{\ln y} \, dy dx$

[6] Let D be the region bounded by the graphs of $x = y^2$ and $y = x - 2$. Evaluate the integral $\iint_D \left(6x + 12y^2\right) dxdy$.

[7] Express $\int_1^4 \int_1^{\sqrt{x}} xe^y \, dydx$ as an iterated integral with the reverse order of integration.

[8] Let D be the triangular region with vertices $(-1,0)$, $(0,2)$, and $(2,0)$. Using the change of variables $x=\dfrac{u+v}{3}$, $y=\dfrac{2v-u}{3}$, express $\iint_D (x+y)\,dxdy$ as an iterated integral. Do Not evaluate the integral.

[9] Let D be the region in the first quadrant of the xy-plane bounded by the graphs of $(x-1)^2+y^2=1$, $x=1$, and $y=0$. Express $\iint_D e^{x^2+y^2}\,dA$ as an iterated integral in polar coordinates.