PRACTICE TEST 3

(1) 40 pts. Compute the following 4 integrals.

(A) $\int \left(\frac{1}{3y} - \frac{5}{\sqrt{y}} + e^{-y/2} \right) dy$

(B) $\int \frac{x^2 + x}{x+1} \, dx$

(C) $\int_1^2 \frac{\ln(x^2)}{x}\,dx$

(D) $\int t\,\ln(t^2)\,dt$

(2) 20 Sketch the region bounded by the curves and find the area, where curves are $y = 4x$, $y = \frac{1}{x}$, $y = x$.

(3) 20 · Compute first and second partial's, determine critical pts and state criterion (and use) to determine if max, min, or saddle, if $f(x,y) = xy + 7$

(4) 10 pts If $z = f(x,y) = xy + x + y$, estimate the value of $f(1,1)$, using $f(0,0) + \Delta z$, where Δz involves partial derivs of f, and Δx, Δy. Hint what are Δx, Δy?

(5) (A) (5) Find the antiderivative of $\frac{1}{x+1} = \frac{dy}{dx}$, if $y = 1$ when $x = 0$

(B) (5 pts) Find $\int_2^3 f(x)\,dx$ if $\int_0^3 2f(x) = 4$ and $\int_0^2 f(x) = 1$