Fourth Exam Study Guide

1. Find the antiderivative
   1. *f*(*x*) = *5x*2 − 2*x* + 9

b. *f*(*x*) = 9*x*1/4 − 3*x*3/4

c. *f*(*x*) = *x*(4 − *x*)2

d. f(u)= u4 + 7sqrt(u)

u2

e. g(θ) = cos θ − 3 sin θ

1. Find antiderivative using U-substitution

a. ∫cos3 θ sin θ dθ

b. ∫ (3x - 9)20 dx

c. ∫ (x + 1) sqrt(2x + x2) dx

d. ∫ x

(x2+7)2 dx

e. ∫sec(14 x) tan(14x) dx

f. ∫ cos (sqrt 6t)

sqrt(6t) dt

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g. ∫sqrt(x19) sin(1 + *x*21/2) *dx*

h. ∫sin 37*t* sec2(cos 37*t*) *dt*

i. ∫ *x*3sqrt(x2+50) dx

j. ∫ x2

sqrt(4-x) dx

* + 1. Use the Fundamental Theorem of Calculus to find the derivative

a. G(x)= ∫ sqrt(x2+4)dx [0, x]

b. F(x)= ∫sqrt(1+secx) dx [x,pi]

c. G(x)= ∫ sqrt(1+x3)dx [0,x^2]

d. F(x)= ∫ sin(x)3 dx [ex, 0]

e. G(x)= ∫ (x5 +5) dx [x2, x3]

1. Find the net area of the functions using both the limits and definite integrals:

a. f(x)= 2-x2 in [-2,2]

b. f(x)=x2 + 3 [-3, 1]