PROBLEM 1: Match the integrals with those obtained by changing the order of integration. No justifications are needed. Note that one of the Roman letters I)-V) will not be used, you have to chose four out of five.

Enter I,II,III,IV or V here.	Integral
	$\int_0^1 \int_{1-y}^1 f(x,y)\ dxdy$
	$\int_0^1 \int_y^1 f(x,y)\ dxdy$
	$\int_0^1 \int_0^{1-y} f(x,y)\ dxdy$
	$\int_0^1 \int_0^y f(x,y)\ dxdy$

I) $\int_0^1 \int_0^x f(x,y)\ dydx$

II) $\int_0^1 \int_0^{1-x} f(x,y)\ dydx$

III) $\int_0^1 \int_x^1 f(x,y)\ dydx$

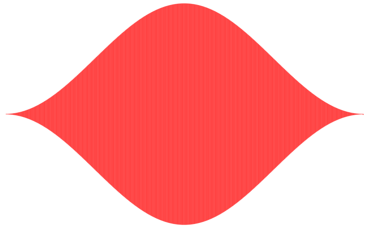
IV) $\int_0^1 \int_0^{x-1} f(x,y)\ dydx$

V) $\int_0^1 \int_{1-x}^1 f(x,y)\ dydx$

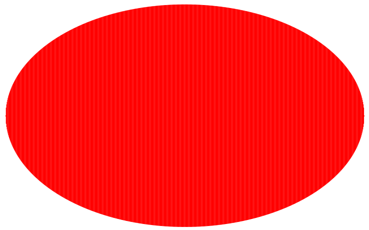
COACH: 2D INTEGRATION Math 21a, Fall 2006

PROBLEM 2: Check the boxes indicating which of the region is a y simple region or a x-simple region.

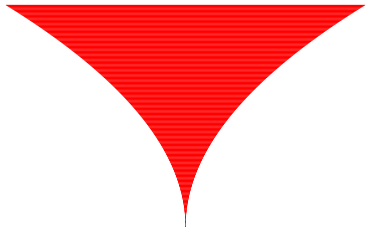
A



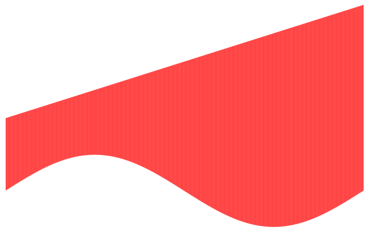
B



C

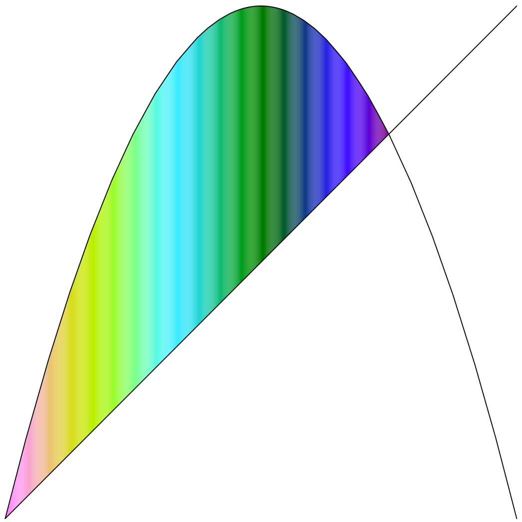


D

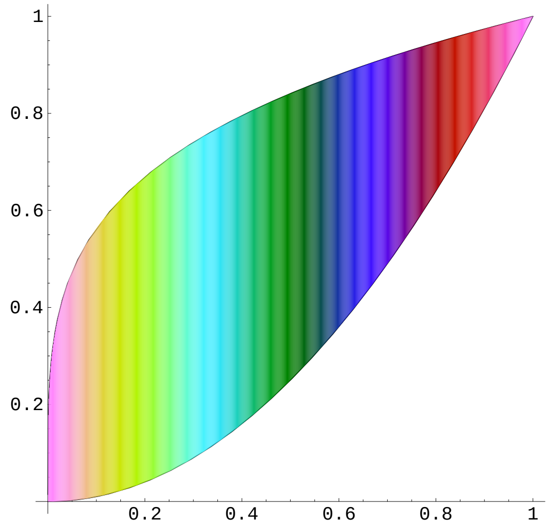


E

PROBLEM 3 Find the area of the region enclosed by the curves $y = x - x^3$ and $y = x/4$.



PROBLEM 4 Set up the integral $\int\int_R x^2 + y \, dxdy$ where R is the region enclosed by the curves $y = x^{1/4}$ and $y = x^2$. Do this in two different ways as x-simple and y-simple regions.



COACH: 2D INTEGRATION Math 21a, Fall 2006

Make a picture of the region

Mind the order of integration

Setting up double integrals

PROBLEM 5 Integrate y over the region satisfying the following conditions $x^2 \leq y \leq 1 - x^4$.

Changing the order of integration

PROBLEM 6 Find the integral $\int_0^1 \int_y^1 \frac{\sin(x)}{x} \, dxdy$

COACH: 3D INTEGRATION Math 21a, Fall 2006

Make a picture of the solid

Use a convenient coordinate system

Setting up triple integrals

PROBLEM 7 Integrate xy over the solid satisfying the following conditions $x^2 + y^2 \leq z \leq 1 - x^2 - y^2$.

Other coordinate systems

PROBLEM 8 Find the volume of the intersection of the sets $x^2 + y^2 > z^2, 3x^2 + 3y^2 < 4z^2, x^2 + y^2 + z^2 < 9$.