**STA 504 Homework #6**

**Due: Monday, 10/31**

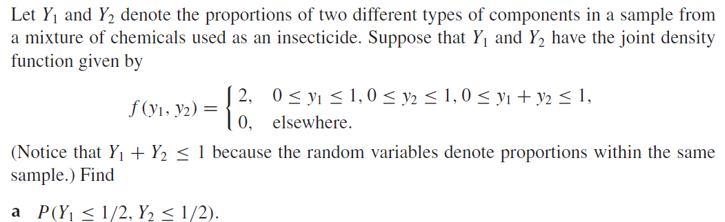
This set of homework problems focuses on setting up the integral limits of double integral. You are expected to draw the integral region on the y1-y2 coordinate plane and set up the limits of the iterative based on the shape of the region.

The following linked page helps set up integral limits of double integrals.

<http://tutorial.math.lamar.edu/Classes/CalcIII/DIGeneralRegion.aspx>

The level of detail (graphs and algebra) in your work should be similar to that in the working examples in the lecture note.

**Problem 1.**

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**Problem 2.**

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**d.** Find the marginal distributions of *y*1 and *y*2, respectively.

[Hints: (1). You need to draw the region on which the density was defined;

(2). F(a,b) = P[Y1<a, Y2<b] gives you the additional constraints to define the sub-region on which the probability will be calculated -i.e., you need the sub-region to set up the integral limits. You should draw the sub-region before setting up the integral limits]

**Problem 3.**

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**c.** Find the marginal distributions of *y*1 and *y*2, respectively.

[Hints: (1). You need the region (domain) to set up the limits to check whether the double integral is equal to 1.

(2). The additional constraint is given by P[Y1 + Y2 < 1]. Please draw the sub-region defined by the additional constraint.]