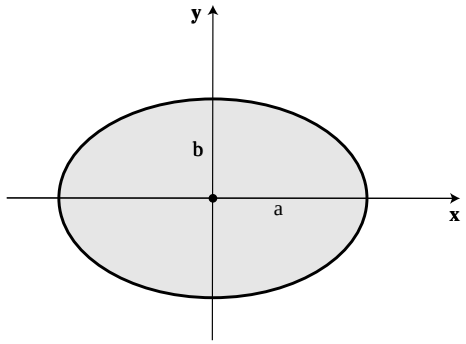
Math 23B
Multivariable Calculus
Fall 1999, UCSC

Sep 30, 1999

PRACTICE QUIZ 1

Time: 10min

1. Compute the area of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.



Hints:

(i) Solve for y to get a function.

(ii) Express the area as an integral.

(iii) Evaluate the integral by using the substitution

$$x = a\cos\theta.$$

Also, recall the half-angle formula:

$$\sin^2\theta = \frac{1-\cos 2\theta}{2}.$$

2. Express the area of the ellipse as a double integral. Do this in two different ways.

LaTeX ..... $\mathcal{MG}$