

# Math 324 Quiz 6 Practice

March 2, 2017

**Problem 1.** State Green's theorem.

**Problem 2.** Use Green's theorem to calculate the (counter-clockwise) integral of  $\vec{F}(x, y) = \langle y \cos x - xy \sin x, xy + x \cos x \rangle$  over  $C$ , where  $C$  is the triangle with vertices  $(0, 0)$ ,  $(0, 4)$  and  $(2, 0)$ .

**Problem 3.** Find a parametric equation for the part of the ellipsoid  $x^2 + 2y^2 + 3z^2 = 1$  that lies to the left of the  $xz$ -plane.

**Problem 4.** Evaluate the surface integral

$$\iint_S x^2 z^2 dS$$

where  $S$  is the part of the cone  $z^2 = x^2 + y^2$  that lies between the planes  $z = 1$  and  $z = 3$ .