General Stuff

- Office Hours

  T: 12:30 - 1:30, Th: 10 - 11

- Final Exam May 6th from 12:00pm - 3:00pm
- Final Exam week office hours:
- Announcement: Lab 12 is the last lab, and we will only count your best 9 labs. I don't know what is going to happen in lab this week yet!

1. Let Cyl be the surface given by the cylinder of height 4 from $z = -2$ to $z = 2$ and radius $r = 3$. Let $G(x, y, z) = (x^2, y, z)$. Describe how Stokes' theorem applies to the integral

$$\iint_{\text{Cyl}} \nabla \times G \cdot dS.$$

2. Let S be the sphere of radius 1 with surface denoted ∂S. Suppose ∂S has outward normal and let $F = (2x + y^2, 3y - \cos x, e^{xy} - z)$. Compute the integral

$$\iint_{\partial S} F \cdot dS.$$

3. Let T be the 2D surface defined by the cylinder $x^2 + y^2 = 4$ from $z = 0$ to $z = 3$ and the bottom hole of the cylinder is filled by the disc of radius 2 $x^2 + y^2 = 4$ in the xy-plane. Given T the outward normal. Compute the integral

$$\iint_T (x^2, y^2, z) \cdot \, dS.$$

4. Let P be the parallelogram formed by the vectors $(1,1,-1), (1,-1,1)$, and $(-1,1,1)$. Suppose ∂P has inward normal. Evaluate the surface integral

$$\iint_{\partial P} (x+y^3, y-x^3, z+2) \cdot dS.$$