General Stuff

- Office Hours

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

  So office hours after class today

- Lab 08 due by the end of tonight
- Quiz 5 on Thursday 3/25
- Topics include 8.1 and 8.3

  1 problem

  15 minutes to take quiz

  5 minutes to upload to gradescope

  11:15 - 11:45 questions before quiz

  11:45 - 12:00 quiz

  12:00 - 12:05 uploading

1. Let $c(t)$ be a path in $\mathbb{R}^n$ and $T(t)$ the unit tangent vector of $c(t)$ at time t. Compute

$$\int_c T \cdot ds.$$

2. a) Copute the path integral of $f(x, y) = y^2$ over the curve $y = \sqrt{1 - x^2}$ from $-1 \leq x \leq 1$. b) Consider the reparametrization $c(\theta) = (\cos(\theta), \sin(\theta))$ from $0 \leq \theta \leq \pi$. Recompute the integral.

3. Which of the following vector fields are conservative?

- $F(x, y, z) = (y - \sin(x)e^y z, \cos(x)e^y z + x, \cos(x)e^y)$
- $G(x, y, z) = \left(\frac{-y}{x^2+y^2}, \frac{x}{x^2+y^2}, 0\right)$
- $H(x, y, z) = (2xy + z^3, x^2, 3xz^2)$

Integrate the vector field H over the curve $p(t) = (t, -t^2, t)$ from $t = -1$ to $t = 1$.

4. Let C be the closed curve $c(t) = (3 + 2\cos(t), -2 + 3\sin(t))$ from $0 \leq t \leq 2\pi$. Compute the line integral

$$\int_C y^2 z e^{xyz}\, dx + e^{xyz}(xyz + 1)\, dy + xy^2 e^{xyz}\, dz.$$