

Source: [\[KBe2020math530fIndex\]](#)

Participation

- Unmute yourself

Homework Review

- From homework 20math530retReadingTheTextbook

Is Dot Product Nice?

- Nice = group properties
 - They aren't because its not closed
 - However, we still like dot product because it can easily tell us if the thing is perpendicular

Inverse of a matrix

- Use 2 systems of equations (2 variables, 2 equations, twice) [\[KBe20math530srcMatrixInverse\].png](#)
- $y = \frac{c}{bc-ad} = \frac{-c}{ad-bc}$
- Determinant determines whether its possible to have an inverse (because if it's zero, then it's not possible!)
 - A matrix with no inverse is **SINGULAR**
 - Determinant of A is zero
 - A has no inverse

Proof Attempt Discussion Page?

Small Groups

1. Calculate cross products
 2. Graph cross products
 3. Cross Product geometry?
 - It's the perpendicular!
 - #bonushw its perpendicular
 4. Determinant geometric interpretation?
 - It's the perpendicular! IF you crossproduct-ify
 - $\begin{bmatrix} x \\ y \end{bmatrix} \Rightarrow \left| \begin{bmatrix} i & j \\ x & y \end{bmatrix} \right| = iy - jx = \begin{bmatrix} y \\ -x \end{bmatrix}$ ## Taking the Determinant (why +-+?)
- We take the sub-matrices on a torus
 - But if you wrap everything around properly then you have a plus in front of every coefficient
 - But if you don't wrap it, then the determinant ends up being the negative, so that's why there's the whole plus minus thing.