

MATH 6A 19F with Prof. Pan

Danning Lu

October 3, 2019

Office Hour: W 10:00-11:00, South Hall 6432G
http://web.math.ucsb.edu/~danninglu/teaching/math_6A_F19/math_6A_F19.html

1 For lecture on 9/26

1. Find the vector pointing from $(0, 2, 3)$ to $(2, 4, 1)$.
2. Find the distance between the two points $(1, 2, 1)$ and $(3, 4, -1)$.
3. Find the dot product between the vectors $\langle 3, 3, -1 \rangle$ and $\langle -2, 8, 2 \rangle$.
4. What is the angle between the vectors $\langle 1, 0, -2 \rangle$ and $\langle 3, 5, 4 \rangle$?
5. Find a real number a such that the vectors $\langle 3, a, 4 \rangle$ and $\langle a - 3, 1, 1 \rangle$ are perpendicular to each other.
6. Let $\alpha = \langle 3, -1, -1 \rangle$ and $\beta = \langle 1, 2, 5 \rangle$ be vectors. Find $\alpha \times \beta$.
7. Find the area of the parallelogram with vertices $(0, 0, 0)$, $(1, 3, 5)$, $(-2, -2, 1)$ and $(-1, 1, 6)$.
8. Find the area of the triangle with vertices $(1, 2, 3)$, $(4, 5, -1)$ and $(0, 3, 0)$.
9. Let $\vec{u} = \langle -3, 3, 2 \rangle$, $\vec{v} = \langle -2, -4, 2 \rangle$, and $\vec{w} = \langle 2, 3, 1 \rangle$. Find
 - (a) $\vec{u} \cdot (\vec{v} + \vec{w})$.
 - (b) $\vec{u} \cdot (\vec{v} \times \vec{w})$.
 - (c) $\vec{u} \times (\vec{v} + \vec{w})$.
 - (d) $(\vec{u} \cdot \vec{v})\vec{w}$.
10. Find the parametric equation of the line passing points $(3, 4, 5)$ and $(1, 1, 1)$.
11. Find the parametric equation of the line segment with end points $(2, 5, -3)$ and $(1, -1, 1)$.
12. Find the plane that passes through the point $(1, 2, 3)$ and perpendicular with the vector $\langle -2, -3, -1 \rangle$.
13. Find the plane that passes through the points $(1, 2, 3)$, $(4, 5, -1)$ and $(0, 3, 0)$.