Things you should know from 11.1, 2, 3:

11.1

- What is the canonical labeling of the axes for the plane ($\mathbb{R}^2$) and 3-space ($\mathbb{R}^3$)?

- How do you compute the distance between two points?

- How do you complete the square for a quadratic $ax^2 + b$?

- What is the equation defining a sphere? The inequality defining a ball?

11.2

- How is the vector from a point P to a point Q defined? That is, how do you define $\overrightarrow{PQ}$?

- What is norm / length / magnitude $\|\mathbf{a}\|$ of a vector?

- What is a unit vector?

- What are the unit vectors in the x, y, and z-directions?

- How do you draw and use a force diagram?

- Basic trig facts: sines, cosines, and tangents of $\theta = \frac{\pi}{d}$ for $d = 1, 2, 3, 4, 6$.

11.3

- How is the dot product $\mathbf{a} \cdot \mathbf{b}$ defined in terms of the components of $\mathbf{a}$ and $\mathbf{b}$? In terms of the angle θ between $\mathbf{a}$ and $\mathbf{b}$?

- What does it mean geometrically for two vectors to be perpendicular / orthogonal? In terms of their dot product?

- How do you compute the projection of a vector $\mathbf{b}$ onto a vector $\mathbf{a}$? That is, how do you compute $\mathbf{pr_a b}$?

- Given two perpendicular / orthogonal vectors $\mathbf{u}_1$ and $\mathbf{u}_2$, how can any vector be decomposed / resolved in terms of $\mathbf{u}_1$ and $\mathbf{u}_2$?

- How is work defined in terms of a dot product?