

- 1.) Sketch a surface in \mathbb{R}^3 with a given equation. Show the specified traces. (Reference: Quiz 5; Exercises 7, 9, 11, 19, 23, 27 on page 818; Handout on surfaces given in class.)
- 2.) Complete the square to simplify the formula for a quadric surface. (Reference: Example 4 on page 815; the last question on Quiz 5.)
- 3.) Differentiate/integrate a vector valued function $\vec{r}(t)$; perform basic operations on vector valued functions. (Reference: Question 1 on Quiz 7; Examples 1 and 2 on page 841.)
- 4.) Applied question on position, velocity and acceleration. (Reference: Example 4 on page 851; Exercises 19, 21 and 22 on page 854.)
- 5.) Find a unit tangent vector to a space curve; write an equation of the tangent line to a space curve at the specified point. (Reference: Examples 1 and 2 on pages 857–858.)
- 6.) Find the principal unit normal vector to a plane curve. (Reference: Example 3 on page 859 (including the paragraph on the bottom of page 859.); Exercise 23, 24 and 25 on page 864.)
- 7.) Describe level curves of a function $f(x, y)$. (Reference: Exercises 49, 51, 53 on page 893.)
- 8.) Find the limit of a function $f(x, y)$. (Reference: Exercises 9, 11, 13, 15, 19, 21, 41, 43, 45, 47 on pages 903–904.)
- 9.) Find partial derivatives of a function $f(x, y)$. (Reference: Exercises 5 - 25 odd, 33, 35, 37, 45, 51, 53, 55, 59, 61, 65, 73, 79, 81 on pages 912–913.)
- 10.) Find the total differential dz of a function $z = f(x, y)$. Then, use dz to approximate the change Δz . (Reference: Example 1 on page 916, Example 3 on page 918; Exercises 11, 13, 17, 19 on page 921.)