

Exam 2
Calculus III

October 2024
Prof. Nollet

- 12.1 Vector-valued functions $\mathbf{r}(t)$, orientation, sketches, eliminating the parameter (finding equations that may help you sketch a function) limits and continuity, derivatives $\mathbf{r}'(t)$, velocity, acceleration, smoothness.
- 12.2 Integrals $\int \mathbf{r}(t) dt$, initial value problems, projectile motion.
- 12.3 Arc length and unit tangent vector.
- 12.4 Curvature, radius of curvature. Know curvature formula from class (it's usually easier to apply than the book formula).
- 13.1 Functions of several variables, especially $z = f(x, y)$, domains, level sets, range, sketches.
- 13.2 Limits and continuity of multivariable functions,
- 13.3 Partial derivatives and their notation, interpretation as rate of change, higher partials, equality of mixed partials.
- 13.4 Chain rule and implicit differentiation.
- 13.5 Directional derivative, gradient, direction of maximal increase/decrease, gradient perpendicular to level curves.
- 13.6 Tangent plane and normal line to a surface at a point. Tangent direction/line of curve of intersection of two surfaces.

Suggestions: Look over homework, quizzes, and examples from class.