Review Test 2, Calculus III

7. Power Series (10.8, 10.9)

Radius of convergence, Interval of convergence (check end points, if any).

Know the Maclaurin series for: e^x, $\sin x$, $\cos x$, $\ln(1+x)$, $\arctan x$ and how to use them to calculate indeterminate limits.

8. Polar Coordinates (9.2, 9.3)

Change from rectangular to polar coordinates and from polar to rectangular.

Area formula in polar coordinates.

9. Parametric Curves (9.4, 9.5)

Eliminate the parameter. Find the tangent line at a point. Calculate $\frac{d^2y}{dx^2}$.

Integral computations.

10. Vectors and cross products (11.1-11.3)

Know how to compute dot product and cross product for vectors $\vec{a} = \langle a_1, a_2, a_3 \rangle$, and $\vec{b} = \langle b_1, b_2, b_3 \rangle$, as well as geometrical interpretations of $\vec{a} \cdot \vec{b}$ and $\vec{a} \times \vec{b}$.

Mixed triple product, and geometrical interpretation.

11. Lines and planes in space (11.4)

Vector, parametric, and symmetric equations of a line. Vector and scalar equations for the plane.

12. Curves in space, motion, curvature, acceleration (11.5, 11.6)

Given position, find velocity and acceleration. Given acceleration and initial conditions, find position.

Arc length function.

Unit tangent, unit normal, curvature.

Normal and tangential components of acceleration.