

Review 3 Math 261

Any term in **bold face** know the definition or statement of the Theorem well enough to state it on the test. The definition you give should be very similar to the one in the book or one with similar detail.

Section 15.1-15.2 Be able to compute double integrals over rectangles Sample problems : example 3, pg 994 exercises # 7, 9

Section 15.3 Be able to compute double integrals over general regions finding limits of integration is key Sample problems : example 1, exercises 11,15

Section 15.5 Be able to find the center of mass for a plate. **know the formula for finding center of mass of a plate** Sample problems : example 2, exercise 7 ,

Section 15.6 Be able to find surface area **know the formula for finding surface area** Sample problems : example 2, exercise 5

Section 15.7 Be able to compute triple integrals, Be able to find the center of mass for a volume. **know the formula for finding center of mass of a volume** Sample problems : example 5, exercise 7

Section 15.9 Jacobian, Be able to compute Jacobians and use them to do a change of variables for a function of two or three variables especially for polar and cylindrical coordinates Sample problems : 15.9 examples 3,4, 15.4 example 3, 15.8-9,

Section 16.1 Vector Field, Be able to draw vector fields in \mathbb{R}^2 Sample problems : 3,11

Section 16.2 Line integrals, $\int_C f(x,y)ds$, $\int P(x,y)dx + Q(x,y)dy$, $\int \mathbf{F}(x,y) \cdot d\mathbf{r}$ Sample problems : 5,9,19

Section 16.3 Conservative vector field, Fundamental thm of line integrals i.e. $\int_C \nabla f(x,y) \cdot d\mathbf{r} = f(\mathbf{r}(b)) - f(\mathbf{r}(a))$ Sample problems : 4, 13

Section 16.4 Green's Theorem $\int_C P(x,y)dx + Q(x,y)dy = \iint_D \frac{\partial Q}{\partial x} - \frac{\partial P}{\partial y} dA$ Sample problems : 3, 9