

Review for Test 2
Math 2850 , Thomas 12th ed.

1. Differentials. Linearizations (page 818, 25-30;39-44). Linear Approximation (page 817 19-24)

2. Tangent Plane to $z = f(x, y)$ or to $F(x, y, z) = C$ at (a, b, c) . Page 817, 1-18.

$$z = f(a, b) + f_x(a, b)(x - a) + f_y(a, b)(y - b)$$

$$F_x(a, b, c)(x - a) + F_y(a, b, c)(y - b) + F_z(a, b, c)(z - c) = 0$$

(On your formula sheet.)

3. Normal line to $F(x, y, z) = C$ at (a, b, c)

$$x = a + F_x(a, b, c)t, y = b + F_y(a, b, c)t \text{ and } z = c + F_z(a, b, c)t$$

4. Local Maxima, Minima and Saddles on open or unbounded sets. Page 826-827 1-30.

5. Absolute Maximum and Minimum on closed bounded sets. Remember, every continuous function defines on a closed bounded region has both an absolute min and an absolute max. Check for critical points in the interior and then check the boundary. The check of the boundary requires working around corners. Page 827, 31-42

6. Double Riemann sums and volumes. Evaluating double integrals.

(a) Over a rectangular region. Iterated integrals. Page 858-859

(b) Over regions between the graphs of functions. Page 865 1-54; Page 870 1-16

7. Average value. Page 876 33-36; Page 885 37-40

8. Polar Coordinates. Page 876 9-22

9. Triple integrals. Page 883-884 1-11 and 21-22.

10. Mass and Moments of three dimensional solids. Mass M of D if the density is $\delta(x, y, z)$ is $\iiint_D \delta dV$. The other formulas for first and second moments and the center of mass should be on your formula sheet. Page 884-885