

Worksheet #23

- (1) Find the equation of the tangent plane to the surface $z = 2e^{3y} \cos(2x)$ at $(\pi/3, 0, -1)$.

- (2) Find all points on the surface $z = x^2 - 2xy - y^2 - 8x + 4y$, where the tangent plane is horizontal.

- (3) Use the total differential dz to approximate the change in z as (x, y) moves from P to Q where $z = \ln(x^2y)$ where $P(-2, 4)$ and $Q(-1.98, 3.96)$.

- (4) In determining the specific gravity of an object, its weight in air is found to be $A = 36$ lbs and its weight in water is $W = 20$ lbs, with a possible error in each measurement of 0.02 lb. Approximate the error in calculating the specific gravity S , where $S = A/(A - W)$.