

CALCULUS 3 - FALL 2017 - HOMEWORK 6

1) Find all first order partials for $f(x, y, z) = e^{x \sin yz}$

2) Use the differential estimating formula to approximate the amount of metal in a cylindrical can with radius 4 cm and height 12 cm if the metal is 0.04 cm thick.

3) Consider the graph of $z = e^{x^2+y^2}$. Find a unit vector normal to this surface when $x = y = 1$

4) A brick wall is made with ten bricks laid end to end without mortar. If the length of each brick is 12" with possible error 1%, what is the maximum possible error in the length of the wall?

5) Assuming the order of partial differentiation does not matter, how many distinct fourth order partials are there of a function of three variables?

6) Find $\frac{\partial^2 f(x, y, z, t)}{\partial y \partial x}$ if $f(x, y, z, t) = \frac{\sin(xz^t)}{\cos xt^2} + \frac{e^{yz}}{2tx}$, assume Clairaut's Theorem