MATH 202: Homework 5

due Wednesday, October 4

(1) Find the equation of the tangent plane to the surface $z = e^{x+y}\cos(xy)$ at $(0, 1, e)$.

(2) Let $f(x, y, z) = x^2+xyz+y^3z$. Use the affine approximation determined by the derivative of f to approximate $f(1.01, 1.95, 2.2)$. How close is your approximation to the true value?

(3) Given the functions

$$f(x, y) = (x^3e^{xy}, xy^2 - y) \qquad \text{and} \qquad g(u, v) = (u, ve^u, -uv),$$

compute the derivative $D(g \circ f)_{(1,1)}(h, k)$.

Do the following problems from the textbook:

§4.5: 3, 4, 5, 7, 9

§4.6: 3