Name:

1. Calculate the derivative of the function $f(x, y) = e^{x^2 \cos y}$ at the point $(1, \pi/2)$ in the direction of the vector $\mathbf{v} = \frac{3}{5}\mathbf{i} + \frac{4}{5}\mathbf{j}$.

2. Find the equation of the tangent plane to the ellipsoid $x^2 + 2y^2 + 3z^2 = 9$ at the point $(2, 1, 1)$.

   Hint: On Tuesday I mentioned that for a function $f(x, y)$ of two variables, $\nabla f(x, y)$ is always a normal vector to the level curves $f(x, y) = c$. In this case you have a level **surface** $f(x, y, z) = 9$. Now generalize from two variables to three.