# Math 367 – Tutorial #2

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September 28-30, 2021

1. Find the directional derivative of
$$f(x, y) = xe^y + ye^x$$
at $(0, 0)$ in the direction making an angle $\theta = \pi/6$ to the horizontal.

2. Find and classify the critical points of the function.
   (a) $f(x, y) = x^2 + xy + y^2 - 6x + 6$
   (b) $f(x, y) = x^3 + y^2 + 2xy - 4x - 3y + 5$
   (c) $f(x, y, z) = \frac{1}{2}(5x^2 + 11y^2 + 2z^2 + 16xy + 20xz - 4yz)$