## Math 367 – Tutorial #2

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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) 
$$f(x,y,z) = \frac{1}{2}(5x^2 + 11y^2 + 2z^2 + 16xy + 20xz - 4yz)$$