

## Quiz 2

Name: \_\_\_\_\_

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Math 765

Recall that the Lie bracket of vector fields  $A$  and  $B$  is defined to satisfy

$$[A, B]f = A(Bf) - B(Af).$$

Compute the Lie bracket  $[A, B]$  of the vector fields

$$A = \frac{\partial}{\partial x}$$
$$B = y \frac{\partial}{\partial x} - x \frac{\partial}{\partial y} = r \frac{\partial}{\partial \theta}$$

on the manifold  $M = \mathbb{R}^2 - \{0, 0\}$ .

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**Solution**

