Fill in each cell of the pictured $6 \times 6$ board with one of the following six functions.

$$\sin x, \cos x, -\sin x, -\cos x, e^{-x}, \text{ and } -e^{-x}$$

Furthermore, each function should appear exactly once in each row and each column. The arrows between cells indicate a derivative relationship: there is an arrow $f(x) \to g(x)$ if $g(x) = f'(x)$ (though not all derivative relations between cells have an arrow clue).

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