

## Calculus I

# Derivative of a trigonometric function times a monomial

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2019

## Example (Product Rule, with Cosine)

Differentiate  $f(x) = x \cos x$ .

$$\begin{aligned}\text{Product Rule: } f'(x) &= \frac{d}{dx}(x)(\cos x) + (x) \frac{d}{dx}(\cos x) \\ &= (1)(\cos x) + (x)(-\sin x) \\ &= -x \sin x + \cos x.\end{aligned}$$