

Ex. 7 Find $\frac{dy}{dx}$ $y = x \cos(xy)$

Trig Derivatives
Classwork/
Quiz Review

- * product rule
- * Implicit

↳ product rule

$$\frac{dy}{dx} = \underbrace{1}_{f'} \cdot \underbrace{\cos(xy)}_g + \underbrace{x}_f \cdot \underbrace{(-\sin(xy))}_{g'} \cdot \left[1 + x \left(\frac{dy}{dx} \right) \right]$$

$$\frac{dy}{dx} = \cos(xy) - xy \sin(xy) - x^2 \sin(xy) \left(\frac{dy}{dx} \right)$$

$$\frac{dy}{dx} + \frac{dy}{dx} (x^2 \sin(xy)) = \cos(xy) - xy \sin(xy)$$

$$\frac{dy}{dx} [1 + x^2 \sin(xy)] = \cos(xy) - xy \sin(xy)$$

$$\frac{dy}{dx} = \frac{\cos(xy) - xy \sin(xy)}{1 + x^2 \sin(xy)}$$