

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

Score: \_\_\_\_\_

**Derivatives using Product Rule**

Sheet 2

Find the derivatives using product rule:

$$y = \sqrt[5]{x} \cot 2x$$

$$y = \sin x \cos x$$

$$y = x^2 \sin x$$

$$y = e^{5x} \tan x$$

$$y = (x + 5) \cos x$$

$$y = \frac{1}{2} \log(1 + 5x) \cos 6x$$

$$y = x e^{x^3 + 5x^2}$$

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Answer key

Derivatives using Product Rule

Sheet 2

$$\frac{dy}{dx} = \frac{1}{5} x^{-\frac{4}{5}} \cot 2x - 2 x^{\frac{1}{5}} \csc^2 2x$$

$$\frac{dy}{dx} = \cos^2 x - \sin^2 x$$

$$\frac{dy}{dx} = 2x \sin x + x$$

PREVIEW

$$\sqrt{x} \sec 6x \tan 6x$$

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$$\frac{dy}{dx} = e^{5x} (5 \tan 4x)$$

$$3x^2 \log(1 + x)$$

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$$\frac{dy}{dx} = 2(x + 5)^2 \sin 6x$$

$$+ 7x^6 + 9)$$

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$$\frac{dy}{dx} = \frac{5 \cos 6x}{2(1 + 5x)} - 3 \log(1 + 5x) \sin 6x$$

$$\frac{dy}{dx} = e^{x^3 + 5x^2} (3x^3 + 10x^2 + 1)$$