

Student Name: _____

Score: _____

Derivatives using Product Rule

Sheet 1

Find the derivatives using product rule:

$$y = (x^2 + 1)(x + 1)^2$$

$$y = (x + 1)(\sqrt{x} + 2)$$

$$y = (x^2 + x + 1)(x - 1)$$

$$y = x(x^7 + 15)^3$$

$$y = x^2(x + 7)^3$$

$$y = x^7 \sqrt{4x^2 + 7}$$

$$y = \sqrt{x}(x^2 + 4)$$

$$y = (\sqrt{x^2 + 1})(\sqrt{x^2 - 1})$$

$$y = (2x + 1)(2x - 1)^4$$

$$y = (\sqrt{x} - 1)(\sqrt{x} + 1)$$

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Answer key

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$$\frac{dy}{dx} = 2(x+1)(2x^2+x+1)$$

$$\frac{dy}{dx} = \frac{x+1}{2\sqrt{x}} + \sqrt{x} + 2$$

$$\frac{dy}{dx} = 3x^2$$

$$\frac{dy}{dx} = (x^7 + 15)^2 (22x^7 + 15)$$

$$\frac{dy}{dx} = x(x+7)^2(5x+14)$$

$$\frac{dy}{dx} = \frac{32x^8 + 49x^6}{\sqrt{4x^2 + 7}}$$

$$\frac{dy}{dx} = \frac{3x^2 + 4}{2\sqrt{x}}$$

$$\frac{dy}{dx} = \frac{2x^3}{\sqrt{x^4 - 1}}$$

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

$$\frac{dy}{dx} = 1$$