

Chain Rule Practice

Name: _____

Find the derivative of each function.

$$1. \quad y = (3x+1)^{30} \qquad \frac{dy}{dx} =$$

$$2. \quad f(x) = \sin(5x) \qquad \frac{d}{dx} f(x) =$$

$$3. \quad g(y) = \cos(y^3) \qquad \frac{d}{dy} g(y) =$$

$$4. \quad a = (3x^2 - 4x)^{35} \qquad \frac{da}{dx} =$$

$$5. \quad l = \sin^5(8h^3) \qquad \frac{dl}{dh} =$$

$$6. \quad m = \sqrt{2n^3 - 4n} \qquad \frac{dm}{dn} =$$

$$7. \quad y = \left[\cos \sqrt{3x^8 - x} \right]^{20} \qquad \frac{dy}{dx} =$$

$$8. \quad x = \sin y - \cos^2 y \qquad \frac{dx}{dy} =$$

$$9. \quad \Phi = \sqrt{3 \cos \sqrt{I}} \qquad \frac{d\Phi}{dI} =$$

$$10. \quad y = \sin^2 x + 4 \cos x - \sqrt{9x^3 + 2} \qquad \frac{dy}{dx} =$$

$$11. \quad f(x) = 13 \cos^5 \sqrt{\sin x} \qquad \frac{d}{dx} f(x) =$$

$$12. \quad g(y) = \frac{1}{\sqrt{8y^3 - 4y + 1}} \qquad \frac{d}{dy} g(y) =$$