

SHEET #342:

NAME:

KEY

CHAIN RULE = ALGEBRAICALLY

PERIOD: _____

$$\frac{d}{dx} f(g(x)) = f'(g(x)) \cdot g'(x).$$

$$1. \frac{d}{dx} (x+1)^3 = 3(x+1)^2 \cdot 1$$

$$2. \frac{d}{dx} (2x+1)^3 = 3(2x+1)^2 \cdot 2$$

$$3. \frac{d}{dx} (x^2+1)^3 = 3(x^2+1)^2 \cdot 2x$$

$$4. \frac{d}{dx} e^{x^2} = e^{x^2} \cdot 2x$$

$$5. \frac{d}{dx} \sin(e^x) = \cos(e^x) \cdot e^x$$

$$6. \frac{d}{dx} e^{\sin x} = e^{\sin x} \cdot \cos x$$

$$7. \frac{d}{dx} \sin x^2 = \cos(x^2) \cdot 2x$$

$$8. \frac{d}{dx} \sin(e^{x^2}) = \cos(e^{x^2}) \cdot e^{x^2} \cdot 2x$$

$$9. \frac{d}{dx} x \sin(x^2) = 1 \cdot \sin(x^2) + x \cdot \cos(x^2) \cdot 2x$$

$$10. \frac{d}{dx} \frac{\sqrt{\sin e^x}}{x} = \frac{\left(\frac{1}{2\sqrt{\sin e^x}} \cdot \cos(e^x) \cdot e^x\right) \cdot x - \sqrt{\sin e^x} \cdot 1}{x^2}$$