

Extra Practice Problems — 02/16/05

These questions are exercises in computing derivatives using the chain rule, but will also use other derivative rules we have covered.

Compute the following:

$$(1) \frac{d}{dx} [\sin(x^2)]$$

$$(2) \frac{d}{dx} [\sin^2(x)]$$

$$(3) \frac{d}{dx} [3^{x^2+1}]$$

$$(4) \frac{d}{dx} [\sqrt[3]{x^3 + 1}]$$

$$(5) \frac{d}{dx} [\sin^{100}(x)]$$

$$(6) \frac{d}{dx} [(2x^2 + 4)^5]$$

$$(7) \frac{d}{dx} [e^{x^2+1} \cdot \log(2x)]$$

$$(8) \frac{d}{dx} [\sin(\cos(\sin(x)))]$$

$$(9) \frac{d}{dx} [e^{\sin(2x)}]$$

$$(10) \frac{d}{dx} [\sin(e^{2x})]$$

$$(11) \frac{d}{dx} [e^{f(x)}]$$

(12) Find all maxima and minima of the function $f(x) = e^{-x^2}$.