

Practice Problems — 02/16/05

(1) Let $f(x) = x^3 + \frac{3}{2}x^2 - 18x + 1$. Find all relative maxima and minima of f .

(2) Find all relative maxima and minima of the function $f(x)$ for which $f'(x) = e^{\sqrt[3]{\sin(\cos(\sin(x)))}}$.

Compute the following:

$$(3) \frac{d}{dx} [\tan(x)]$$

$$(4) \frac{d}{dx} [\sec(x)]$$

$$(5) \frac{d}{dx} [\cot(x)]$$

$$(6) \frac{d}{dx} [\csc(x)]$$

$$(7) \frac{d}{dx} [\sin^2(x) + \cos^2(x)]$$

$$(8) \frac{d}{dx} [\sin(2x)]$$

$$(9) \frac{d}{dx} [e^{x^2+1}]$$

$$(10) \frac{d}{dx} [\sin(\cos(x))]$$

$$(11) \frac{d}{dx} [(f(x))^n], \text{ where } f(x) \text{ is a differentiable function}$$

$$(12) \frac{d}{dx} [e^{\sqrt{x^2+1}}]$$

$$(13) \text{ Use the fact that } x = e^{\log(x)} \text{ to find } \frac{d}{dx} [\log(x)].$$