Problem 1

Find $\frac{d}{dx}\left(2x^4 - x^3 + 3\sqrt{x}\right)$

Problem 2

If $f(x) = x^{20} + 15x^{\frac{1}{15}} + \frac{1}{2x^2}$, what is $f'(x) =$

(hint: $\frac{1}{2x^2} = \frac{1}{2}\frac{1}{x^2}$)

Problem 3

Find $\frac{d}{dx}\left(\frac{x^3 - \frac{2}{x} + x + 1}{x^4 + x^2}\right)$

Problem 4

Find $\frac{d}{dx}\left((\frac{1}{\sqrt[3]{x}} + 2x + 1)(x^5 - x^{\frac{2}{5}})\right)$

Problem 5

Given that $f(x) = \frac{x^2 + 1}{x^3 + 1}$, give the equation of the tangent line at $x = 1$. *hint: remember that the slope of the tangent line is* $f'(1)$