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Problem Set 4

Choose two exercises to hand it in LaTeX form.

1. Using the chain rule, find the next derivatives.
   (a) $(x^4 - 1)^3$
   (b) $(x^2 - 1)^4 - 6(x + 7)^4$
   (c) $(2x^3 - 6x^4)^3 \cdot (4x^2 - 5x)^2$
2. Find both the local and global maxima of these functions.
   (a) $-3x^5 + 5x^3$, where $x \in [-1, 2]$
   (b) $x^3 + 3x^2 - 24x + 3$, where $x \in [-5, 5]$
3. Find the antiderivative $F(x)$ of the following functions, then find the derivatives $f'(x)$ of the antiderivatives you just found.
   (a) $3x^2 + 2x^3 + 1$
   (b) $7x^6 + 6x^5 + x$
4. Integrate the next functions.
   (a) $\int_1^4 (5x^2 - 5)dx$
   (b) $\int_1^9 \frac{(2x+5)}{2} dx$