# PROBLEMS YOU SHOULD BE ABLE TO SOLVE

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What follows is a list of problems that you should be able to solve given what we have learned so far. Keep checking back on this since the list will be updated as we learn more. This is a good resource to identify holes in your understanding, these questions should not be as difficult as quiz and exam questions.

- Compute

$$\frac{d}{dx}\left(4x^{300} + 2x^{30} + 42\right).$$

- Draw the graph of a function $f$ such that $f'(x) > 0$ for all real numbers and such that $f''$ takes on both positive and negative values.

- Compute

$$\frac{d}{dx}\left(6^x\right).$$

- Compute

$$\frac{d}{dx}\left(e^{x^2+3}\right).$$

- For a differentiable function $f$, compute

$$\frac{d}{dx}\left(\frac{1}{f(x)}\right).$$

- Give an example of a function which has horizontal tangent lines only when $x = 1$ or $x = -1$