**Some thoughts and advice:**

- You should expect to spend several hours on problem sets. A lot of practice problem-solving is essential to understand the material and skills covered in class. Be organised and do not leave problem sets until the last-minute. Instead, get a good start on the problems as soon as possible.
- When approaching a problem think about the following: *do you understand the words used to state the problem? what is the problem asking you to do? can you restate the problem in your own words? have you seen a similar problem worked out in class? is there a similar problem worked out in the textbook? what results/skills did you see in class that might be related to the problem?*

  If you are stuck for inspiration come to office hours, or send me an email. However, don't just ask for the solution - provide your thought process, the difficulties you are having, and ask a coherent question in complete English sentences.
- Form study groups - get together and work through problem sets. **This will make your life easier!** You must write your solutions *on your own* and *in your own words*.
- If you would like more practice then let me know.
- You **are not allowed** to use any additional resources. If you are concerned then please ask.

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Do **not submit** solutions to the following problems. These are practice exercises that you should complete. They may appear as quiz problems.

1. 1-56, 65 in Section 3.4
2. 1-47 in Section 3.5
3. 1-41 in Section 3.6
4. 30-37 in Section 3.10

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Submit solutions to the following problems on **Friday, October 26th**.

1. Problems 31, 51, 53, 55, 58, 59, 68, 74, 75, 96-102 in Section 3.4
2. Problems 24, 39, 43, 55 in Section 3.5
3. Problems 3, 7, 15, 27, 31, 40, 74-76, 81, 82 in Section 3.6
4. Problems 14, 17, 19, 24, 25, 38-41 in Section 3.10
5. In this problem you will use logarithmic differentiation to determine $\frac{d}{dx}\log_a(x)$, where $a > 0$ and $a \neq 1$.

   Let $a > 0$, $a \neq 1$. By writing $y = \log_a(x)$, use logarithmic differentiation to show that

   $$\frac{d}{dx}\log_a(x) = \frac{1}{\ln(a^x)}$$

6. Let

   $$y = \frac{\sqrt[3]{x^2+1}(x^4+2x+1)^2}{3x^2+5}$$

   We can compute $\frac{dy}{dx}$ using the quotient, product and power rules. However, logarithmic differentiation makes life easier.

   (a) Using logarithm laws, determine $A, B, C$ so that

   $$\ln(y) = \frac{1}{3}\ln(A) + 2\ln(B) - \ln(C)$$

   (b) Use the previous equation to determine $\frac{dy}{dx}$.