1. What information in Section 5.1 would have helped you read section 5.2 and answer some of my questions in class on Wednesday?

2. Read the definition of critical point carefully. Is \( x = 0 \) a critical point for the function \( f(x) = \frac{1}{x} \)? Why or why not?

3. What is the function of myelin? In the pictures in the myelin Wikipedia article https://en.wikipedia.org/wiki/Myelin, estimate the ratio of the axon diameter to the diameter of the myelinated axon.

4. Explain why it is easy to find the derivative of \( \log_a x \) once you know the derivative of \( \ln x \). Hint: use the change of base formula.

5. (a) Explain why the derivative of \( \ln[u(x)v(x)] \) is \( \frac{d}{dx} \frac{u(x)v(x)}{u(x)v(x)} \). What derivative rules did you use?

(b) Now use a property of logarithms to rewrite \( \ln[u(x)v(x)] \), and take the derivative of this new expression, which would also be the derivative of \( \ln[u(x)v(x)] \).

(c) Set the two expressions for the derivative of \( \ln[u(x)v(x)] \) equal to each other, and solve for \( \frac{d}{dx} u(x)v(x) \). What did you just prove?