1. (*Compare the examples and exercises in* §2.2 and §2.6.) Give an example of a graph $y = f(x)$ with a vertical asymptote at $x = -1$ and a horizontal asymptote at $y = 2$.

2. (*Compare the examples and exercises in* §4.3 and §4.5.) In these sections there are problems which list a number of criteria for the graphs of functions, such as "$f(1) = 0$" or "$f'(x) > 0$ for $0 < x < 5$" or "f has an inflection point at $x = -3$". Build an example with 7 such criteria and sketch a graph with these properties. Can the criteria be in conflict?

Some advice for the actual Final Exam:

Read the question. Don't just guess it is of a certain type.

3. (*Compare the examples and exercises in* §3.4.) Build an example of a complicated chain rule derivative question. Compute the derivative.

4. (*Compare the examples and exercises in* §5.5.) Write the previous example as an indefinite integration question. Give a substitution which will solve it, and do the integral. Is the problem you have built of reasonable difficulty?

5. (*Compare the examples and exercises in* §3.9.) In related rates problems several quantities are changing in time, but these quantites are related by an equation. Build such an example.