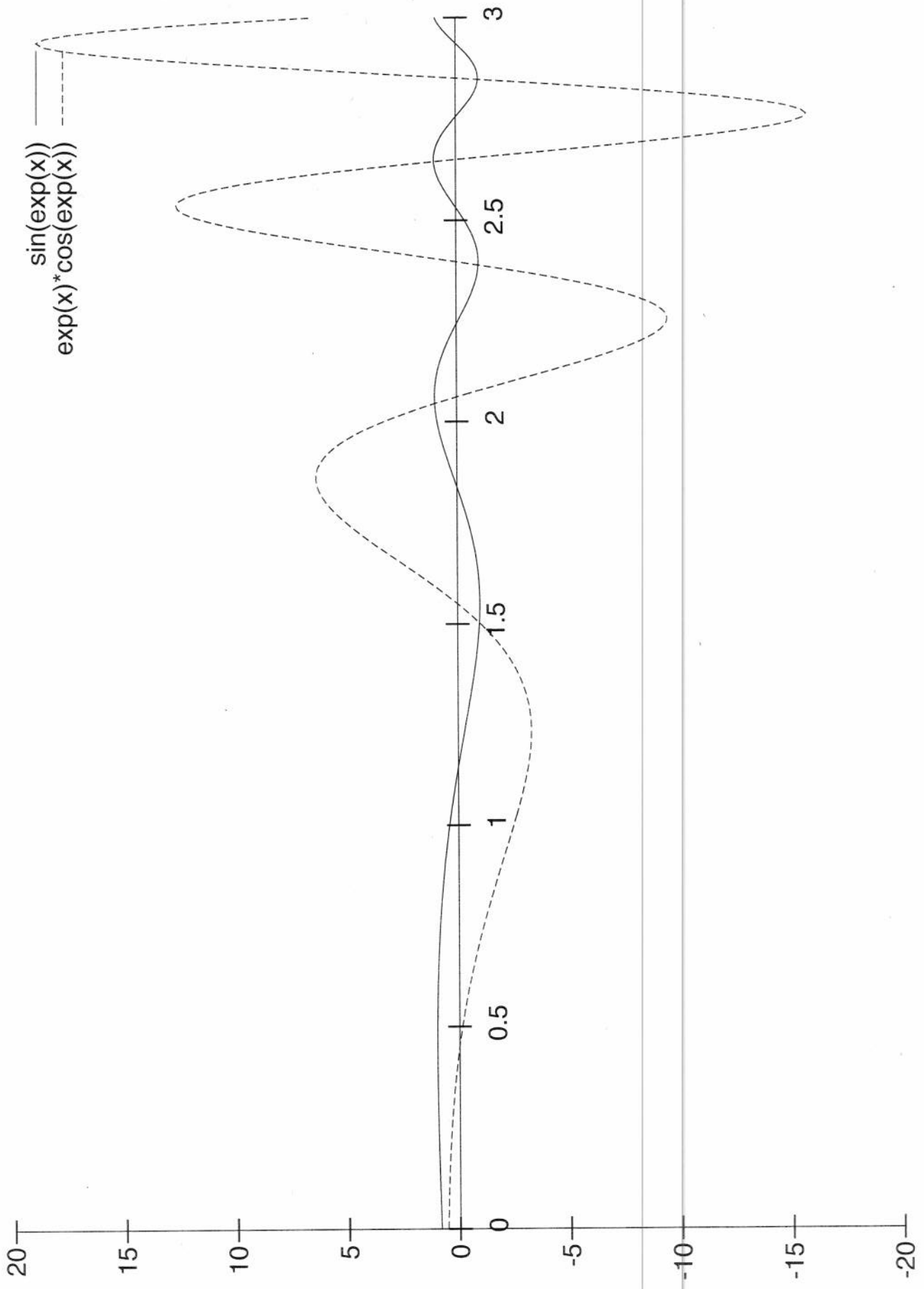


Classifying critical points: If c is a critical point of $f(x)$, then

- if $f'(x) < 0$ just to the left of c and $f'(x) > 0$ just to the right of c , then c is a local minimum;
- if $f'(x) > 0$ just to the left of c and $f'(x) < 0$ just to the right of c , then c is a local maximum;
- if $f'(x)$ is positive on both sides of c , or if it is negative on both sides of c , then c is not a local min/max.



Midterm information:

The test will be 90 minutes long and consist of have 20 multiple choice questions.

It will cover sections 1.6 (including inverse trig), 2.5, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.11, 4.1, 4.8. There will be a question or two explicitly addressing Maple.

There will be two seatings for the exam on the Thursday evening; 6:30–8:00 and 8:15–9:45. See course website to find out which sitting and which room you'll be in.

There will be an early seating for the exam on the Wednesday, at 2:30. If you are unable to make the Thursday seatings, you can request the early seating time on the homework website.

Midterm 1 syllabus in some detail

- Inverse functions - concept; invertible \leftrightarrow 1-1.
- Limits - concept, calculation.
- Continuity.
- IVT - statement; use.
- Derivatives - limit definition; tangent lines; differentiability; diffble \rightarrow conts; higher derivatives.
- Differentiation techniques: linearity; product rule; chain rule; differentiating polynomials, powers (x^b), exponentials (b^x), logarithms, $f(x)^{g(x)}$, trig/hyp, inverse trig/hyp.
- trig/hyp: definitions (triangles for trig, $\cosh(x) = \frac{e^x + e^{-x}}{2}$ etc for hyp); fundamental identities ($\cos^2 + \sin^2 = 1 = \cosh^2 - \sinh^2$), inverses (arc-foo), differentiating.
- Implicit differentiation
- Newton's method.
- Minima and maxima: finding local and global mins/maxes; critical points