

## Study Guide for Unit 2

**Important definitions.** You should know the meanings of the following terms. (All of them are important, so none of them will be bold-faced.)

Term	Lecture	Reference
Linearization	Lecture 8	Notes A
Linear approximation	Lecture 8	Notes A
Quadratic approximation	Lecture 8	Notes A
Local/absolute maximum	Lecture 9	§4.1 p. 116
Local/absolute minimum	Lecture 9	§4.1 p. 116
Critical point	Lecture 9	§4.1 p. 116
Critical value	Lecture 9	§4.1 p. 116
Concave up	Lecture 9	§4.2 p. 120
Concave down	Lecture 9	§4.2 p. 120
Inflection point	Lecture 9	§4.2 p. 120

**Skills checklist.** Be able to do each of the following.

1. Compute derivatives of trigonometric functions.
2. Determine the linear and quadratic approximations to a function at a point.
3. Using the mean value theorem, the value of the function at one point, and bounds on the derivative in a neighborhood of this point, bound the function in the neighborhood of a point.
4. Find the critical points of a function.
5. Use the First Derivative Test to determine whether a function is increasing or decreasing.
6. Use the Second Derivative Test to determine the concavity of a function.
7. Find all local extrema and inflection points of a function. Determine which local extrema are absolute maxima/minima.
8. Give a rough sketch of the graph of a function, labelling all local extrema, inflection points, and vertical and horizontal asymptotes.
9. Solve applied maximum and minimum problems.