

QUIZ 2 STUDY GUIDE

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Note: 2.1.1 means: Problem 1 in section 2.1

Know how to:

- Find the limit of a function at a point (or say that it does not exist) and vertical asymptotes of a function given its graph (2.2.9)
- Same thing as above, but with left-hand-side and right-hand-side limits
- Sketch the graph of a function with given limits (2.2.15)
- Given 2 graphs of f and g , finding limits of $f + g$, $f \times g$, etc. (2.3.2)
- **Evaluating a limit of a function at a point (or showing that it does not exist), given its equation:**
 - By substituting into the expression (2.3.5)
 - By noticing, for example, that it's of the form $\frac{1}{0^\pm}$ (and hence it's $+\infty$) (2.2.25, 2.2.28)
 - By noticing that the left-hand limit and the right-hand limit are equal (or not equal, if the limit does not exist)
 - By factoring the numerator/denominator, and by 'canceling out' (2.3.11, 2.3.15)
- **Finding limits rigorously, using an $\epsilon - \delta$ -argument**
A good practice would be: 2.4.19, 2.4.22, 2.4.29, 2.4.30, 2.4.31

Note: For the exam, you should also know how to find left-hand limits and right-hand limits and infinite limits using an $\epsilon - \delta$ -argument although I will not ask you that on this quiz.

Also, know how to define the following terms (some of this is repeat from the first study guide, but is listed here for your convenience):

- Function
- Domain of f
- Range of f
- Absolute Value Function
- Increasing/Decreasing
- e
- $f \circ g$ (f composed with g)
- Inverse function (in particular \ln)
- $\lim_{x \rightarrow a} f(x) = L$ (the rigorous definition), as well as its variants $\lim_{x \rightarrow a^+} f(x) = L$, $\lim_{x \rightarrow a^-} f(x) = \infty$
- Vertical asymptote (I will not ask you this on the quiz, but look it up for the exam)

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