Midterm 2 review guide. Math 30 (Precalculus).

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This is a list of topics that you should know well from each section, and which exercises from the book you can do practice that topic.

NOTE: The list of exercises is very long. It does not mean that you have to do all these exercises. Rather, for each topic in each section, try a couple of exercises. If everything is very clear, move on to the next topic; otherwise try a few more exercises and ask for help if you need.

- **Section 3.7**
  - Understanding the definition of rational functions.
  - Horizontal asymptotes of rational functions. Definition and how to find them. *Ex. 10–19, 25–29*
  - Vertical asymptotes of rational functions. Definition and how to find them.
  - x and y intercepts of rational functions. *Ex. 20–24*
  - Graphing rational functions.*Ex. 39–49, odd numbered*
  - Writing a rational function given the graph. *Ex. 51, 57, 59*
- **Section 4.1**
  - Definition of exponential functions. *Ex. 44–50*
  - Properties of exponential functions.
  - The number e and the exponential with base e.
  - Graphs of exponential functions.
- **Section 4.2**
  - Understand what graphs of exponential functions look like.
  - Graph an exponential function by making a table of values and plotting points. *Ex. 11, 13–18, 43, 45*
- **Section 4.3**
  - Definition of logarithm in base b.
  - Converting between logarithmic form and exponential form of an equation. *Ex. 6–41*
  - Evaluating simple logarithms without a calculator. *Ex. 42–53*
  - Evaluating any logarithm with a calculator. *Ex. 54–58*
- **Section 4.4**
  - Understand what graphs of logarithmic functions look like. *Ex. 11, 13, 26–30*
  - Graph an logarithmic function by making a table of values and plotting points. *Ex. 35, 37, 41, 43*
- **Section 4.5**
  - Understand and apply the product, quotient, and power rules for logarithms. *Ex. 30–32*
  - Expanding logarithmic expressions. *Ex. 3–8, 15–19*
  - Condensing logarithmic expressions. *Ex. 9–14, 20–24*
  - Understand and apply the change of base formula for logarithms. *Ex. 25–29, 33-37*

- **Section 4.6**
  - Solving different kinds of exponential equations:
    - With common base. *Ex. 5, 7, 9*
    - With non-common base using logarithms. *Ex. 11–28*
  - Solving different kinds of logarithmic equations:
    - When there are logarithms and numbers (write it in exponential form). *Ex. 31–35*
    - When there are only logarithms. *Ex. 36–50*