

The following is a list of topics that you should know to be prepared for Exam 2. A couple example problems are given, but make sure you understand the whole topic and could do any problem you may come across rather than the specific problems given here. Don't forget that your WrittenHW, WebHW, in-class worksheets, quizzes, and exams used in past 115 courses are all available to you!

## 1 Graphing

- identify points on the coordinate axes (§1.3 #61)
- plot points given a function (§1.3 #55)
- perform graph transformations of lines, quadratics, and  $y = \frac{1}{x}$ 
  - vertical and horizontal shifts (§1.5 #11)
  - vertical stretches (§1.5 #31)
  - ordering of the transformations (§2.5 #51)
- use graph transformations to find the rule of a function
- use the domain to create holes in the graph (§2.5 #71)

## 2 Polynomials

- Recognizing polynomials and its components (§2.2 #19, 25)
  - degree (§2.2 #1)
  - leading term, constant, (§2.2 #13)
- End behavior
  - even polynomial vs odd polynomial (§2.2 #31,33)
  - how this is effected by a negative leading coefficient (§2.2 #29)
- Roots/ $x$ -intercepts/zeros (§2.2 #37,49b)
  - Connection between roots and factors
  - identify roots and their multiplicity from a graph (§2.3 #37)
  - algebraically finding the roots (§2.4 #27)

- Sketching a graph from an equation (§2.6 #31)
- Finding an equation from a graph (§2.3 #39)
- Note that lines and quadratics are examples of polynomials so those sections from the last test are fair game.

### 3 Rational Functions

- Recognizing rational functions and their domain (§2.5 #11,21)
- Diving polynomials to alter the rational function for graph transformations. (§A.2 #65,71)

### 4 Inverse Functions

- understand the use and definition (§1.7 #17,33)
- determine if an inverse exists algebraically & graphically (§1.7 #9, 41)
- find the inverse algebraically (§1.7 #55)
- find the inverse graphically (§1.7 #39)
- know the relationship between the domain and ranges of  $f$  and  $f^{-1}$ .

### 5 Exponents

- use the order of operations (§A.1 #89)
- compute & simplify (§A.1 #129,133, §3.1 #21)
- solve equations with exponents

### 6 Word Problems

- problems that use polynomial equations (§2.2 #63,67)
- problems that use rational functions (§2.5 #85,91)
- problems that use exponents (§A.1 #141, §3.1 #81)
- problems that use inverses (§1.7 #69,75)