

## REVIEW TEST 3 - Chapters 5, 6, and 7

To prepare for the test, study the following:

### CHAPTER 5

- Simplifying rational expressions
  - Operation with rational expressions
  - Inverse proportionalities
  - Solving rational equations and rational literal equations
  - Applications
  - Finding domain for rational functions
  - Graphing basic rational functions
  - Finding the least-squares rational function which corresponds to some given points
- Study all exercises done in class, all textbook examples and homework problems.

### CHAPTER 6

- Evaluating radicals and radical expressions
  - Simplifying radicals
  - Operations with radicals
  - Rationalizing denominators
  - Solving radical equations and literal radical equations
  - Finding domain for radical functions
  - Graphing basic radical functions
  - Finding the distance between two points and the midpoint of a line segment
  - Finding the least-squares radical function which corresponds to some given points
- Study all exercises done in class, all textbook examples and homework problems.

### CHAPTER 7

- Evaluating exponential and logarithmic expressions
  - Simplifying logarithmic expressions
  - Finding domain and graphing basic exponential and logarithmic graphs
  - Applications involving exponential growth and decay and compound interest
  - Finding the inverse of a function
  - Graphing the inverse of a function
  - Determining whether or not two functions are inverses of each other
  - Solving exponential and logarithmic equations
  - Applications with logarithmic scales
- Study all exercises done in class, all textbook examples and homework problems.

**More practice:**

Simplify:

1)  $\frac{12x^3}{\frac{14y^3x}{20x}}$       2)  $\frac{18cd^3}{24c^2d^2}$       3)  $\frac{\frac{9}{8a} + \frac{2}{12a}}{\frac{1}{4a} - \frac{2}{6a}}$       4)  $\frac{1}{5r} - \frac{4}{15r}$       5) Textbook page 340, exercises 14, 20

Solve:

6)  $\frac{3x}{5} - \frac{13}{5} = \frac{2x}{10} - \frac{7}{5}$       7) Textbook page 342, exercises 60, 74, 76, 78

8) Suppose that  $x$  and  $y$  are inversely proportional, and that when  $y = 8$ ,  $x = 2$ . Give the value of  $y$  which corresponds to  $x = 4$ .

9) (#81 page 343) A Honda Insight can travel an average of 60 mi per gallon of gas. How many kilometers can this car travel on 20 L of gas?

10) Give the domain and graph  $y = -\frac{4}{x}$ . Find the inverse function.

11) Use the least squares methods to fit the model  $y = \frac{k}{x}$  to the data points:  $\{(4,1), (1,4), (8,0.2)\}$

12) Evaluate and round appropriately (assume that 27 is exact):  $\frac{9.71 - 11.0}{\frac{1.45}{\sqrt{27}}}$ .

13) Simplify:  $8\sqrt{2x} + 7\sqrt{18x}$ .

Solve:

14)  $-8\sqrt{9-4v} + 10 = 2$       15) Textbook page 386, exercises 70, 72      16) Textbook page 399, exercises 35, 36, 37, 38

Give the domain, range, and intercepts. Graph the function. Find its inverse and graph it on the same coordinate system, showing the symmetry about the bisector line.

17)  $f(x) = -2\sqrt{x}$       18)  $g(x) = \sqrt{x-1}$

Give the domain and range and graph each function. Find the inverse of each function and graph it on the same coordinate system, showing the symmetry about the bisector line.

19)  $f(x) = 4^x$       20)  $g(x) = \log_2 x$       21)  $h(x) = e^x$       22)  $l(x) = \ln x$

23) Textbook page 435, exercises 39, 41, 45, 49

Find the inverse of each function:

24)  $f(x) = 2x - 5$       25)  $g(x) = \frac{2}{3x+1}$

Solve:

26) Textbook page 481, exercises 7, 11, 17, 21, 67, 83, 87, 105, 107, 109  
27) Textbook page 494, exercises 11, 13, 15