Review for Exam 1

Section 1.1

Given information about x and y-find resulting sign
Write statements as inequalities
absolute values

Section 1.2

Exponents:

$$x^m x^n = x^{m+n} \qquad x^{-m} = \frac{1}{x^m}$$

$$\left(x^m\right)^n = x^{mn} \qquad \frac{x^m}{x^n} = x^{m-n}$$

$$x^0 = 1 \qquad \left(xy\right)^m = x^m y^m$$

$$\left(\frac{x}{y}\right)^m = \frac{x^m}{y^m}$$

Radicals:

$$\sqrt[b]{x^a} = x^{\frac{a}{b}}$$

Section 1.3

Polynomials:

adding, subtracting, multiplying, dividing
factoring -- look for common factors first
three terms--trial and error
two terms--formula or common factor

Section 1.4

Rational expressions (fractions with polynomials):

adding, subtracting, multiplying, dividing

Complex fractions (fraction over a fraction)

Rationalizing denominators:

$$\frac{3}{\sqrt{x}} = \frac{3}{\sqrt{x}} \cdot \frac{\sqrt{x}}{\sqrt{x}} = \frac{3\sqrt{x}}{x} \text{ or}$$

$$\frac{3}{\sqrt{x}+1} = \frac{3}{\sqrt{x}+1} \cdot \frac{\sqrt{x}-1}{\sqrt{x}-1} = \frac{3\sqrt{x}-3}{x-1}$$

Rationalizing numerators

Section 2.1

Solving equations:

linear
rational equations (fractions with variable in denominator)--either an answer you can use, an answer you can't use (no solution) or all real x except x =??

Solving formula for a variable

For what value of c is x=? a solution of the equation

Section 2.2
story problems--look over homework

Section 2.3
Solving quadratic equations-- $ax^2 + bx + c = 0$
(1) solve by factoring
(2) solve by completing the square (do not have to)
(3) solve by quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

applications

Optional Review Problems for Exam 1

Page 50: **#3, 4, 13, 15, 16, 17, 23, 28, 31, 42, 44, 46, 5(**
51, 52, 60, 61, 65, 67, 68,
75, 77, 79, 84;
Page 120: #2, 3, 4, 6, 7, 13, 55, 60, 62, 63, 71, 72;

Old exams available on
www.math.purdue.edu/MA153