Review of Prerequisites Chapter

P.1 Intro. Algebra, Absolute Value

1. Evaluate algebraic equations by substitution.

G: $h = 4 + 60t - 16t^2$ F: h ft when $t = 3$ sec.

2. Learn the definition of **absolute value**

$$|a| = \begin{cases} a, & \text{if } a \geq 0 \\ -a, & \text{if } a < 0 \end{cases}$$

3. Find absolute values of numerical expressions.

$|-7 - \pi| = \underline{\ 7 + \pi\ }$, since $-7 - \pi < 0$

use $-(7 - \pi)$

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P.2 Exponents and Scientific Notion

1. The meaning of an exponent. $2^3 = 2 \cdot 2 \cdot 2 = 8$

2. The Product Rule $b^m b^n = b^{m+n}$

3. The Quotient Rule $\dfrac{a^m}{a^n} = a^{m-n}$

4. The Power Rule $(a^m)^n = a^{mn}$

5. The Zero Exponent Rule $a^0 = 1, a \neq 0$

6. The Power of a Product Rule $(ab)^m = a^m b^m$

7. The Power of a Quotient Rule $\left(\dfrac{a}{b}\right)^n = \dfrac{a^n}{b^n}$

8. Simplify $\left(4b^3c^7\right)^2 \left(2b^5c^4\right)^3 = 128\ b^{21}c^{26}$

9. Scientific notation. n.nn (10^k)

$(1.1 \times 10^9)(1.1 \times 10^{-12}) = (1.21)(10^{-3}) = 0.00121$

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P.3 Radicals & Rational Exponents

1. Multiply radicals. $\sqrt{ab} = \sqrt{a}\sqrt{b}$

2. Add or subtract radicals. $\sqrt{20} + 6\sqrt{5}$

3. Divide radicals by rationalizing the denominator.
$$\frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

4. Rationalize the denominator using conjugates
$$\frac{1}{2-\sqrt{5}} = \frac{1}{2-\sqrt{5}} \cdot \frac{2+\sqrt{5}}{2+\sqrt{5}} = -2-\sqrt{5}$$

5. Rules of exponents apply to rational exponents.
   $(9x^{1/2})(2x^{-3/2})$ $(125x^9y^6)^{1/3}$

6. Understand the relationship between rational exponents and radical indices. $16^{1/4} = \sqrt[4]{16} = 2$

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P.4 Polynomials

1. Perform operation of addition, subtraction and multiplication of polynomials.
   $(6x^4y + x^3y^2 - 3x^2y^3) - (4x^3y^2 - 3x^2y^3 - 5xy^4)$

   $3xy(5x - 2y)$

2. Review FOIL in mult of polynomials

   $(2x + 1)(x - 1)$ $(x - y)(x + 3y)$

3. Recognize and perform special products

   $(x - 3y)^2$ $(3x + 5y)(3x - 5y)$

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P.5 Factoring Polynomials

1. Distributive Property (common factors)

$$32x^3y + 40x^2y^4$$

2. Trial and Error (trinomials)

$$2x^2 - 5x - 3$$

3. Factor by Grouping

$$x^2 - 8x + 15$$

	+	-
15 = 1(15)	16	14
= 3 (5)	8	2

Get 8 from sum
Same sign.
Need -8, so use -3 and -5

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P.6 Rational Expressions

1. Rational Expressions: the quotient of polynomials.

$$\frac{1 - x}{2x^2 - 5x - 3}$$

2. Restrictions on the Domain of Rational Expressions: values of x that make denom=0. $x \neq -1/2, 3$

3. Simplify Rational Expressions: find Common Factors, and reducing to lowest terms.

$$\frac{4x - 8}{x^2 - 4x + 4} = \frac{4}{(x-2)}$$

4. Perform operations of addition, subtraction, multiplication and division of Rational Expressions.

$$\frac{6x + 9}{3x - 15} \cdot \frac{x - 5}{4x + 6} = \frac{1}{2}, x \neq -3/2, 5$$

$$\frac{4}{x} - \frac{3}{x + 3}$$

$$\frac{x^2 - 4}{x^2 + 3x - 10} \div \frac{x^2 + 5x + 6}{x^2 + 8x + 15} = 1, x \neq -2, 2, -5, -3$$

5. Use the Multiplication Property of 1 to simplify complex fractions.

$$\frac{\frac{x}{x - 2} + 1}{\frac{3}{x^2 - 4} + 1} \cdot \frac{(x + 2)(x - 2)}{(x + 2)(x - 2)}$$

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Attachments

absoluteValue.wma

absoluteValue2.wma