Mathematics Support Capsules

Combine and simplify as much as possible the following expressions:

Questions   *Answers*

1) $\dfrac{1}{a+b} - \dfrac{2a}{a^2 - b^2}$ 1)_____

2) $\dfrac{x^2 + 2x + 1}{2x^2} \div \dfrac{x+1}{x+2}$ 2)_____

3) $-\dfrac{a+b}{ac+bd}$ 3)_____

4) $\dfrac{(2a)^3}{a^5}$ 4)_____

5) $(0.2a^2)^4$ 5)_____

6) $\dfrac{8y^n}{-2y^{n-1}}$ 6)_____

7) $\sqrt[3]{-64y^{27}}$ 7)_____

8) $\sqrt{a^2 + b^2}$ 8)_____

9) $(a + b)^3$ 9)_____

10) $(\sqrt{x} + 3\sqrt{y})(\sqrt{x} - \sqrt{y})$ 10)_____

Solve the following equations for x :

11) $x^3 - x^2 - 6x = 0$ 11)_____

12) $x^2 + 7x = -3$ 12)_____

Now check your answers on the next page!

Algebra Diagnostic Answers

Answers to algebra diagnostic test	If you missed these questions, review the indicated sections of the MSC *Algebra Capsule*.	If you need more than a brief review, work through the indicated sections of Hughes-Hallett, *Algebra*.
1) $\dfrac{-a-b}{a^2-b^2} = \dfrac{-1}{a-b} = \dfrac{1}{b-a}$ 2) $\dfrac{x^2+3x+2}{2x^2}$ 3) cannot be simplified	II. Fractions	Chapters $4, 10$
4) $\dfrac{8}{a^2}$ 5) $0.0016a^8$ 6) $-4y$	III. Exponents	Chapter 7 (using 10^m, but the rules apply to a^m)
7) $-4y^9$ 8) cannot be simplified	IV. Radicals	Chapter 6
9) $a^3 + 3a^2b + 3ab^2 + b^3$ 10) $x + 2\sqrt{xy} - 3y$	V. Simplifying Algebraic Expressions	Chapters $3, 8, 9, 11$
11) $x = 0, 3, -2$ 12) $x = \dfrac{-7 \pm \sqrt{37}}{2}$	VI. Solving Equations	Chapters $12, 14, 15$

If you missed many questions, try reading Chapters $1, 4,$ and 8 of Isaac Asimov, *Realm of Algebra* (Fawcett Publications, 1961), which is a brief, conversational paperback that many students have found helpful (especially Chapters 1 and 8), or go directly to Deborah Hughes-Hallett, *The Math Workshop: Algebra* (W. W. Norton, 1980), which is also very conversational, but detailed, with excellent exercises, or George F. Simmons, *Precalculus Mathematics in a Nutshell* (William Kaufmann, 1981), a delightfully succinct paperback covering essentials.

All these books are available for examination or browsing in the Mathematics Support Center and for sale at the Campus Bookstore and other bookstores in Collegetown.