College Algebra
Chapter R **REVIEW**   **KEY**
To receive full credit you must show work.

$$\text{Let } A = \{\, -13, -\frac{12}{4}, 0, \frac{\pi}{4}, \frac{3}{5}, 5.9, \sqrt{49} \,\}$$

1. List all the elements of A that belong to the given set.

   a. Integers: ___-13, -12/4, 0, √49___

   b. Rational numbers: ___-13, -12/4, 0, √49 , 3/5, 5.9___

   c. Real numbers: ___-13, -12/4, 0, √49 , 3/5, 5.9, π/4___

2. Evaluate the expression if x = -2, y = -4, and z = 5. $\left|\dfrac{x^2+2yz}{3(x+z)}\right|$ $\left|\dfrac{(-2)^2+2(-4)(5)}{3(-2+5)}\right|$ = 4

Perform the indicated operations

3. (x² – 3x + 2) – (x – 4x²) + 3x(2x + 1)   4. (6r – 5)²   5. (t + 2)(3t² – t + 4)
   11x²-x+2   36r²-60r+25   3t³+5t²+2t +8

Factor _completely._

6. 6x² – 17x + 7   (3x - 7)(2x - 1)   7. 8a³ – 64b³   8(a – 2b)(a² + 2ab + 4b²)

8. 24m³ – 14m² – 24m 2m(4m + 3)(3m - 4) 9. x³y² – 9x³ - 8y² + 72
                                              (x - 2)(x² + 2x + 4)(y + 3)(y - 3)

Perform the indicated operations.

10. $\dfrac{5x^2-9x-2}{30x^3+6x^2} \cdot \dfrac{x^2+x-2}{x^4-3x^2-4}$ $\dfrac{x - 1}{6x^2\,(x^2 + 1)}$ 11. $\dfrac{x}{3x+2}+\dfrac{x}{x-3}$ $\dfrac{4x^2 - x}{(3x + 2(x - 3)}$

12 $\dfrac{a+b}{2a-3}-\dfrac{a-b}{3-2a}$ $\dfrac{2a}{2a-3}$

14. Simplify so there are no negative exponents.
    Assume all variables are positive real numbers. $\left(\dfrac{x^{-2}y^{-1/3}}{x^{-5/3}y^{-2/3}}\right)^{3}$ $\dfrac{y}{x}$

15.
Evaluate $\left(\dfrac{-8}{27}\right)^{-4/3}$ $= \left(\sqrt[3]{\dfrac{27}{-8}}\right)^{4} = \left(\dfrac{3}{-2}\right)^{4} = -\dfrac{81}{16}$

Simplify. Assume all variables represent positive real numbers.

16. $\sqrt{18x^5y^8}$ 3x²y⁴√2x   17. $\sqrt{32x}+\sqrt{2x}-\sqrt{18x}$
                                                                      2√2x

18. $\left(\sqrt{x}-\sqrt{y}\right)\left(\sqrt{x}+\sqrt{y}\right)$ x - y

19. Rationalize and simplify $\dfrac{14}{\sqrt{17}-\sqrt{3}}$ √17 + √3