Remember that unknowns may not have any value that yields a denominator of zero.

Tell whether the equation is correct or incorrect. If it is incorrect, rewrite the right-hand side correctly.

1. $\dfrac{A^2 + 2A + 3}{A^2 + A + 9} = \dfrac{A^2}{A^2 + A + 9} + \dfrac{2A}{A^2 + A + 9} + \dfrac{3}{A^2 + A + 9}$

2. $\dfrac{X}{X} + \dfrac{Y}{X} = \dfrac{X + Y}{X}$

3. $\dfrac{X^2 + 3X + 6}{X^2 + 2X + 7} = \dfrac{X^2}{X^2} + \dfrac{3X}{2X} + \dfrac{6}{7}$

4. $\dfrac{B}{B} + B^0 = 1$

Simplify by factoring.

5. $\dfrac{4X^2 + X}{X}$

6. $\dfrac{Y^2 + 2Y}{Y}$

7. $\dfrac{4X + 4Y}{2}$

8. $\dfrac{12AB + 16A^2}{4A}$

9. $\dfrac{5XY + 20XYZ}{5YZ}$

10. $\dfrac{2X^2Y - XY^2}{XY}$

Find the common denominator and combine.

11. $\dfrac{6}{X+2} + \dfrac{4X}{X+2} =$

12. $\dfrac{3}{4} + \dfrac{3}{X} =$

13. $\dfrac{7}{4X} - \dfrac{3}{4Y} =$

14. $\dfrac{A}{B} - \dfrac{B}{A} =$

15. $\dfrac{3X}{Y-1} + \dfrac{2X}{Y+1} =$

16. $\dfrac{R}{T} + \dfrac{RS}{RT} =$

2E

Tell whether the equation is correct or incorrect. If it is incorrect, rewrite the right-hand side correctly.

1. $\dfrac{X+3}{X} = 1 + \dfrac{3}{X}$

2. $\dfrac{2}{X+1} + \dfrac{3}{X} = \dfrac{2}{X+1} + \dfrac{3+1}{X+1}$

Simplify the expression, if possible.

3. $\dfrac{AX - 6Y + 6X}{2} =$

4. $\dfrac{B^4 - B^2}{B^2} =$

5. $\dfrac{6A^2 + 6A}{12A} =$

Find the common denominator and combine.

6. $\dfrac{4}{X} + \dfrac{1}{3} =$

7. $\dfrac{X}{Y} + \dfrac{4Y}{X+2} =$

8. $\dfrac{3}{Q+1} + \dfrac{2}{Q} =$

Simplify.

9. $2^2 X^3 \cdot 2^3 X^{-1} =$

10. $\dfrac{Y^3}{Y^3} =$

11. $\left[\left(5^2\right)^4\right]^{-3} =$

12. $\left(49^3\right) = \left(7^2\right)^3 =$

13. $\left(x^2\right)^3\left(x^{-4}\right)^2 =$

14. $\left(p^{-4}\right)^{-2} p^3 \, p^{-1} =$

Multiply all the elements of the equation by the least common multiple to simplify, and then solve.

15. $.024\,F + F = .56$

16. $10\dfrac{2}{3}\,B + 3\dfrac{1}{6} = 1\dfrac{7}{8}$

Use the distributive property to eliminate the parentheses, and add like terms when possible.

17. $100(2.3X - .07Y) =$

18. $1000\,(.009A + .02 + 3) =$

Solve.

19. $(6 \div 9) \cdot 2 - 9Y = 8(Y - 4 + 7)$

20. $(11 - 4)^2 \div 7 - |3 - 9| = 14(R - 2R)$