

### 1.11 Practice Set

1. What is the difference between an expression and an equation and how does that affect what you can do to each? Give an example.
2. What is the difference between solving a linear and a quadratic equation? Give an example.
3. Why do we need to check our answers after solving rational equations?

Solve each of the following equations for the indicated variable.

$$4. \quad \frac{4}{x-5} - \frac{2}{x-4} = -\frac{2}{x^2-9x+20}$$

$$5. \quad \frac{x^2-18}{2x^2-9x+9} + \frac{3}{x-3} = \frac{-5}{2x-3}$$

$$6. \quad \frac{4}{x-9} - \frac{5x}{x^2-81} = \frac{2}{x+9}$$

$$7. \quad \frac{2}{x-2} - \frac{4}{x^2-2x} = 3$$

$$8. \quad 1 - \frac{6}{a} = 5$$

$$9. \quad \frac{x^2-2}{x} + 3 = \frac{2(x-1)}{x}$$

$$10. \quad \frac{1}{7x} - \frac{1}{x+6} = \frac{1}{2x^2+12x}$$

$$11. \quad \frac{1}{x} - \frac{x}{4} = 0$$

12.  $\frac{x+1}{x-2} = \frac{3}{x-2}$
13.  $\frac{4}{x^2-1} - 3 = \frac{2x}{x-1}$
14.  $\frac{-6}{2x+1} + 3 = x$
15.  $6 - \frac{5}{5y-6} = \frac{79}{5y-6}$
16.  $\frac{4}{x^2-4} + \frac{2x}{x-2} + \frac{2}{x+2} = 0$
17.  $\frac{x+4}{x^2+8x+15} = \frac{2}{2x+6} - \frac{3}{x+5}$
18.  $24p^{-2} - 10p^{-1} + 1 = 0$
19.  $S = \frac{A-B}{T}$  for  $B$
20.  $\frac{1}{x} = \frac{1}{m} + \frac{1}{n}$  for  $x$
21.  $L = \frac{m(r+s)}{3}$  for  $m$
22.  $L = \frac{m(r+s)}{3}$  for  $r$
23.  $z = \frac{xy}{x+y}$  for  $y$

#### Distributed Practice Problems

Solve each of the following equations for the indicated variable.

24.  $y^3 = 36y$
25.  $x^3 - x = 5x^2 - 5$
26.  $14x^2 + 3x - 2 = 0$

27.  $|x - 6| + 7 = 8$

28.  $|5y - 3| = -6$

Find the difference quotient  $\frac{f(a+h)-f(a)}{h}$  for each of the following functions and simplify.

29.  $f(x) = x^2 + 3x - 2$

30.  $g(x) = \frac{5}{x+4}$