

### Simplifying Rational Expressions Exercise

Simplify the following rational expressions. If possible, state any restrictions on the expressions.

1.  $\frac{24x^2y^3}{16x^3y}$

2.  $\frac{9y^2 - 121}{12y + 44}$

3.  $\frac{14a^3bc}{-91abc^4}$

4.  $\frac{c - 10}{10 - c}$

5.  $\frac{-k + 9}{3k - 27}$

6.  $\frac{6x - 2y}{2y - 6x}$

7.  $\frac{d^3 + 4d^2}{d^2}$

8.  $\frac{3y + 2y}{5}$

9.  $\frac{4bc + 2ac}{8bd + 4ad}$

10.  $\frac{a^2 + 3a + 2}{a^2 + a - 2}$

11.  $\frac{b^2 + 5b}{3b + 15}$

12.  $\frac{6x^2 + 4x - 10}{3x^2 + 2x - 5}$

13.  $\frac{4g^2 - 1}{4g^2 - 4g + 1}$

14.  $\frac{3x^2 - 48}{x^2 + x - 12}$

15.  $\frac{y^2 + 7y}{3y + 21}$

16.  $\frac{3r - 12}{36 - 9r}$

17.  $\frac{f^2 - 14f + 49}{49 - f^2}$

ANSWER KEY:

1.  $\frac{3y^2}{2x}$   $x, y \neq 0$
2.  $\frac{3y-11}{4}$   $y \neq \frac{-11}{3}$
3.  $\frac{-2a^2}{13c^3}$   $a, b, c \neq 0$
4.  $-1$   $c \neq 10$
5.  $-\frac{1}{3}$   $k \neq 9$
6.  $-1$   $x \neq \frac{1}{3}y$  or  $y \neq 3x$
7.  $d+4$   $d \neq 0$
8.  $y$  **none**
9.  $\frac{c}{2d}$   $d \neq 0, a \neq -2b$  or  $b \neq -\frac{1}{2}a$
10.  $\frac{a+1}{a-1}$   $a \neq -2, 1$
11.  $\frac{b}{3}$   $b \neq -5$
12.  $2$   $x \neq -\frac{5}{3}, 1$
13.  $\frac{2g+1}{2g-1}$   $g \neq \frac{1}{2}$
14.  $\frac{3(x-4)}{(x-3)}$   $g \neq -4, 3$
15.  $\frac{y}{3}$   $y \neq -7$
16.  $-\frac{1}{3}$   $r \neq 4$
17.  $-\frac{f-7}{f+7}$   $f \neq -7, 7$