

# 12.6 EXERCISES

## HOMEWORK KEY

 = **WORKED-OUT SOLUTIONS**  
on p. WS1 for Exs. 7, 29, and 45

 = **TAKS PRACTICE AND REASONING**  
Exs. 32, 44, 48, 50, and 51

### SKILL PRACTICE

- VOCABULARY** Copy and complete: The   ? of two rational expressions is the product of the factors of their denominators with each common factor used only once.
- WRITING** Describe your steps in rewriting the expressions  $\frac{1}{x+2}$  and  $\frac{2x}{x^2-4}$  so that they have the same denominator.

#### EXAMPLE 1

on p. 812  
for Exs. 3–11

#### ADDING AND SUBTRACTING EXPRESSIONS Find the sum or difference.

- $\frac{2}{5x} + \frac{3}{5x}$
- $\frac{7}{a+2} - \frac{3a}{a+2}$
- $\frac{7}{m^2+1} - \frac{8}{m^2+1}$
- $\frac{y+1}{2y} + \frac{5}{2y}$
- $\frac{y+1}{b-3} + \frac{b+1}{b-3}$
- $\frac{3}{2y^2} - \frac{5}{2y^2}$
- $\frac{c+2}{c-9} + \frac{c+5}{c-9}$
- $\frac{3r}{r^2+r-7} + \frac{1}{r^2+r-7}$
- $\frac{2n+1}{n^2-16} - \frac{n}{n^2-16}$

#### EXAMPLE 2

on p. 813  
for Exs. 12–17,  
32

#### FINDING THE LCD Find the LCD of the rational expressions.

- $\frac{1}{24x}, \frac{x+2}{6x^3}$
- $\frac{3}{15v^2}, \frac{v^2-4}{20v^3}$
- $\frac{4w}{w+5}, \frac{w+3}{w-2}$
- $\frac{s-1}{s+2}, \frac{s+2}{s-1}$
- $\frac{1}{t^2-4t}, \frac{6}{t^2-2t-8}$
- $\frac{u+9}{u^2+8u+7}, \frac{-3}{u^2-2u-3}$


#### EXAMPLES 3, 4, and 5

on p. 814  
for Exs. 18–31


#### ERROR ANALYSIS Describe and correct the error in finding the sum or difference.

- $\frac{8}{2x+3} - \frac{4x}{x+2}$
- $\frac{5x}{x-4} + \frac{2}{x+3}$

$$\begin{aligned} \frac{8}{2x+3} - \frac{4x}{x+2} &= \frac{8 - 4x}{2x+3 - (x+2)} \\ &= \frac{8 - 4x}{2x+3-x-2} \\ &= \frac{8 - 4x}{x+1} \end{aligned}$$



$$\begin{aligned} \frac{5x}{x-4} + \frac{2}{x+3} &= \frac{5x(x-4) + 2(x+3)}{(x-4)(x+3)} \\ &= \frac{5x^2 - 20x + 2x + 6}{(x-4)(x+3)} \\ &= \frac{5x^2 - 18x + 6}{(x-4)(x+3)} \end{aligned}$$



#### ADDING AND SUBTRACTING EXPRESSIONS Find the sum or difference.

- $\frac{5x}{4} + \frac{2}{5x}$
- $\frac{13}{3y} + \frac{2}{11y}$
- $\frac{7}{2z} - \frac{2}{3z^2}$
- $\frac{7r}{r-2} - \frac{2r}{r-3}$
- $\frac{s}{5s-2} - \frac{1}{4s+1}$
- $\frac{c+3}{c-6} + \frac{c}{3c+10}$
- $\frac{d-5}{d+7} + \frac{d-5}{4d}$
- $\frac{f+3}{7f} - \frac{3f}{f+4}$
- $\frac{1}{g^2+5g+6} - \frac{1}{g^2-4}$
- $\frac{2j}{j^2-1} + \frac{j-1}{j^2-7j+6}$
- $\frac{k+7}{k^2+6k+9} + \frac{k-5}{k^2-5k-24}$
- $\frac{v+2}{2v^2-v-15} - \frac{v-2}{v^2+2v-15}$