

Simplify the rational expressions.

1.  $\frac{4X^2 - 8X}{4X^2 + 4X}$

2.  $\frac{14x^2 - x - 3}{2x^2 - 7x + 3}$

3.  $\frac{(y-5)^2}{y^2 - 25}$

4.  $\frac{5x^2 - 20y^2}{2y - x}$

Perform the indicated operation and simplify if possible.

5.  $\frac{a^2 - 36}{10a} \cdot \frac{2a}{a+6}$

6.  $\frac{6t-6}{2t^2+t-1} \cdot \frac{t^2-1}{t^2-2t+1}$

7.  $\frac{10-5t}{3} \div \frac{t-2}{12t}$

8.  $\frac{4x^4}{x^2-1} \div \frac{2x^3}{x^2-2x+1}$

9.  $\frac{x^2+1}{x-2} \cdot \frac{2x+1}{x+1}$

10.  $(t^2 + 3t - 4) \div \frac{t^2 - 1}{t + 4}$

Perform the indicated operation and simplify if possible.

11.  $\frac{x+8}{x+7} + \frac{10-4x}{x+7}$

12.  $\frac{6x-3}{x^2-x-12} - \frac{2x-15}{x^2-x-12}$

13.  $\frac{x^2}{x-5} - \frac{7x-10}{x-5}$

14.  $\frac{y^2+6y}{y+2} + \frac{2y+12}{y+2}$

15. 
$$\frac{x-7}{x^2+3x-4} - \frac{2x-3}{x^2+3x-4}$$

16. 
$$\frac{5+3t}{4t} + \frac{2t+1}{4t}$$

Put in simplest radical form.

1.  $\sqrt{49}$

2.  $\sqrt{54}$

3.  $\sqrt{96}$

4.  $\sqrt{25x^{16}y^6}$

5.  $\sqrt{9x^9}$

6.  $\sqrt{20x^7y^8}$

Perform the indicated operation. Simplify if possible.

7.  $8\sqrt{7} - 5\sqrt{7} - \sqrt{7}$

8.  $\sqrt{45} - \sqrt{20}$

9.  $2\sqrt{27} - 3\sqrt{12} + \sqrt{300}$

10.  $\sqrt{75x} + \sqrt{12x}$

11.  $\sqrt{5}(3\sqrt{5} + \sqrt{2})$

12.  $(3\sqrt{5} - 2\sqrt{2})(2\sqrt{7} + 5\sqrt{3})$

13.  $(2\sqrt{x} - \sqrt{5})(\sqrt{x} + 3\sqrt{5})$

14.  $(\sqrt{x} - 3)^2$

15.  $\sqrt{\frac{3}{5}}$

16.  $\frac{30}{\sqrt{6}}$

17.  $\frac{7}{\sqrt{3}}$

## Rational Answers

1.  $\frac{x-2}{x+1}$    2.  $\frac{7x+3}{x-3}$    3.  $\frac{y-5}{y+5}$    4.  $-5(x+2y)$    5.  $\frac{a-6}{5}$    6.  $\frac{6}{2t-1}$
7.  $-20t$    8.  $\frac{2x(x-1)}{x+1}$    9.  $\frac{(x^2+1)((2x+1))}{(x-2)(x+1)}$    10.  $\frac{(t+4)^2}{t+1}$    11.  $\frac{-3x+18}{x+7}$  or  $-\frac{3(x-6)}{x+7}$
12.  $\frac{4}{x-4}$    13.  $x-2$    14.  $y+6$    15.  $\frac{-1}{x-1}$    16.  $\frac{5t+6}{4t}$

## Radical Answers

1. 7   2.  $3\sqrt{6}$    3.  $4\sqrt{6}$    4.  $5x^8y^3$
5.  $3x^4\sqrt{x}$    6.  $2x^3y^4\sqrt{5x}$    7.  $2\sqrt{7}$    8.  $\sqrt{5}$
9.  $10\sqrt{3}$    10.  $7\sqrt{3x}$    11.  $15+\sqrt{10}$    12.  $6\sqrt{35}+15\sqrt{15}-4\sqrt{14}-10\sqrt{6}$
13.  $2x+5\sqrt{5x}-15$    14.  $x-6\sqrt{x}+9$    15.  $\frac{\sqrt{15}}{5}$    16.  $5\sqrt{6}$    17.  $\frac{7\sqrt{3}}{3}$