

Unit 5 Rational Expressions Review

Perform the indicated operation. Express your answer in simplest form.

1. $\frac{11}{6x} + \frac{x+1}{4x^2}$

$$\frac{25x+3}{12x^2}$$

2. $\frac{1}{x} - \frac{3}{x-4}$

$$\frac{-2x-4}{x(x-4)}$$

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

$$\frac{-13x+4}{5(x-2)(x+2)}$$

4. $\frac{8}{x+6} + \frac{7x+10}{x^2+8x+12}$

$$\frac{15x+26}{(x+2)(x+6)}$$

5. $\frac{3}{x+2} - \frac{6x}{x}$

$$\frac{-6x-9}{x+2}$$

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

$$\frac{-x+11}{2(x+3)}$$

7. $\frac{m^2-64}{3m-24} \div \frac{m^3+2m^2-48m}{6m}$

$$\frac{2}{m-6}$$

8. $\frac{d^2-1}{d-1} \cdot \frac{18}{d+1}$

$$18$$

9. $\frac{10k-30}{25} \cdot \frac{5k}{k^2-k-6}$

$$\frac{2k}{k+2}$$

10. $\frac{b+4}{4} \div \frac{b+4}{b-1}$

$$\frac{b-1}{4}$$

11. $\frac{x-4}{3x+6} \div \frac{x}{x+2}$

$$\frac{x-4}{3x}$$

12. $\frac{x-5}{3x+9} \div \frac{x}{x+3}$

$$\frac{x-5}{3x}$$

Solve the Rational Equations. Make sure to check for extraneous solutions.

$$13. \frac{18}{x-2} = 6$$

$$x = 5$$

$$14. \frac{2}{x+1} + \frac{x}{x-1} = \frac{2}{x^2-1}$$

$$\cancel{x=1} \quad x = -4$$

$$15. \frac{3}{x-2} = \frac{6}{x+1}$$

$$x = 5$$

$$16. \frac{6}{x^2-2x-15} = \frac{x}{x+3} + \frac{3}{x-5}$$

$$x = 1 \pm \sqrt{2}$$

$$17. \frac{6}{x+2} + \frac{x}{x-3} = \frac{-25}{x^2-x-6}$$

$$x = -1 \quad x = -7$$

$$18. \frac{x}{x^2+x-2} - \frac{2}{x-1} = \frac{3}{x+2}$$

$$x = \frac{1}{4}$$

Solve the Radical Equation.

$$19. -3\sqrt{x-4} = -42$$

$$x = 200$$

$$20. \sqrt{x-2} - 3 = 7$$

$$x = 102$$

$$21. -2 + \sqrt{x-4} = 6$$

$$x = 68$$

$$22. x - 4 = \sqrt{2x}$$

$$\cancel{x=2} \quad x = 8$$

$$23. \frac{3\sqrt{x-7}}{2} - 2 = 7$$

$$x = 43$$

$$24. 2\sqrt{x-7} - 3 = 3$$

$$x = 16$$