

8-6 A Solving Rational Equations

Date _____ Period _____

Solve each equation. Remember to check for extraneous solutions.

1)
$$\frac{a+1}{2a^2} - \frac{1}{6a} = \frac{1}{2a}$$

2)
$$\frac{4}{r-6} = 1 + \frac{2}{r-6}$$

3)
$$\frac{1}{a^2 + 4a + 3} = \frac{1}{a+1} + \frac{1}{3a^2 + 12a + 9}$$

4)
$$\frac{2}{4v+1} - 1 = \frac{1}{4v+1}$$

5)
$$\frac{x}{x+4} + \frac{4}{x-4} = \frac{x^2 + 16}{x^2 - 16}$$

6)
$$\frac{5n+6}{3n} - (n+1) = \frac{1}{3n}$$

7)
$$\frac{n^2}{n+1} = 3n - 15 + \frac{n+2}{n+1}$$

8)
$$\frac{n+2}{n} + \frac{n-1}{n} = \frac{5n-20}{n-6}$$

$$9) p + 3 = \frac{1}{3p} + \frac{p+2}{3p}$$

$$10) \frac{1}{x^2 - x} + \frac{6}{x} = \frac{2}{x}$$

$$11) \frac{1}{2x+4} = \frac{3}{2x+12} + \frac{1}{2x^2+16x+24}$$

$$12) \frac{2}{x^2-4x} - \frac{4x-20}{x^2-4x} = \frac{1}{x-4}$$

$$13) \frac{2}{x^2-3x-18} = \frac{1}{x+3} - \frac{1}{x^2-3x-18}$$

$$14) \frac{1}{n^2-2n-8} = \frac{4n^2+12n-72}{n^2-2n-8} - \frac{1}{n+2}$$

$$15) x - 6 = \frac{x-4}{x+4} + \frac{x^2-25}{x+4}$$

$$16) \frac{x}{x^2-1} + \frac{2}{x+1} = \frac{1}{2x-2}$$

8-6 A Solving Rational Equations

Date _____ Period _____

Solve each equation. Remember to check for extraneous solutions.

1) $\frac{a+1}{2a^2} - \frac{1}{6a} = \frac{1}{2a}$

 $\{3\}$

2) $\frac{4}{r-6} = 1 + \frac{2}{r-6}$

 $\{8\}$

3) $\frac{1}{a^2+4a+3} = \frac{1}{a+1} + \frac{1}{3a^2+12a+9}$

 $\left\{-\frac{7}{3}\right\}$

4) $\frac{2}{4v+1} - 1 = \frac{1}{4v+1}$

 $\{0\}$

5) $\frac{x}{x+4} + \frac{4}{x-4} = \frac{x^2+16}{x^2-16}$

 $(-\infty, -4) \cup (-4, 4) \cup (4, \infty)$

6) $\frac{5n+6}{3n} - (n+1) = \frac{1}{3n}$

 $\left\{\frac{5}{3}, -1\right\}$

7) $\frac{n^2}{n+1} = 3n - 15 + \frac{n+2}{n+1}$ $\left\{\frac{13}{2}\right\}$

8) $\frac{n+2}{n} + \frac{n-1}{n} = \frac{5n-20}{n-6}$

 $\{2, 1\}$

$$9) p + 3 = \frac{1}{3p} + \frac{p+2}{3p} \quad \left\{ \frac{1}{3}, -3 \right\}$$

$$10) \frac{1}{x^2 - x} + \frac{6}{x} = \frac{2}{x}$$

$$\left\{ \frac{3}{4} \right\}$$

$$11) \frac{1}{2x+4} = \frac{3}{2x+12} + \frac{1}{2x^2+16x+24} \quad \left\{ -\frac{1}{2} \right\}$$

$$12) \frac{2}{x^2-4x} - \frac{4x-20}{x^2-4x} = \frac{1}{x-4}$$

$$\left\{ \frac{22}{5} \right\}$$

$$13) \frac{2}{x^2-3x-18} = \frac{1}{x+3} - \frac{1}{x^2-3x-18}$$

$$\{9\}$$

$$14) \frac{1}{n^2-2n-8} = \frac{4n^2+12n-72}{n^2-2n-8} - \frac{1}{n+2}$$

$$\left\{ 3, -\frac{23}{4} \right\}$$

$$15) x - 6 = \frac{x-4}{x+4} + \frac{x^2-25}{x+4} \quad \left\{ \frac{5}{3} \right\}$$

$$16) \frac{x}{x^2-1} + \frac{2}{x+1} = \frac{1}{2x-2}$$

no solution