Algebra 2

4.5 Solving Rational Equations

Name _____

Date _____ Period ____

Solve each equation. Remember to check for extraneous solutions.

1) $\frac{1}{m} + \frac{1}{2m^2} = \frac{3}{2m}$

$\{1\}$

2) $1 = \frac{n+2}{n} - \frac{n-1}{n}$

$\{3\}$

3) $\frac{1}{5k+4} + \frac{1}{k-5} = \frac{k-2}{5k^2-21k-20}$

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

4) $\frac{1}{k^2+3k} = \frac{2}{k^2+3k} + \frac{5}{k}$

$\left\{-\frac{16}{5}\right\}$

5) $\frac{1}{6x} = \frac{x+5}{6x^2} - \frac{x-1}{6x^3}$

$\left\{-\frac{1}{4}\right\}$

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

$\{2, -3\}$

7) $\frac{1}{x+4} = \frac{2}{x^2+4x} + 1$

$\{-2, -1\}$

8) $1 + \frac{3}{m+3} = \frac{1}{m^2+9m+18}$

$\{-7, -5\}$

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4.6 Rational Exponents

Date_____ Period____

Simplify. Your answer should contain only positive exponents.

1) $4x^4 \cdot 3x^2y^4$
$12x^6y^4$

2) $m^3n^4 \cdot 4m^2n^{-1}$
$4m^5n^3$

Simplify.

3) $2x^2 \cdot x^{\frac{4}{3}}$ $2x^{\frac{10}{3}}$

4) $4mn^{\frac{1}{4}} \cdot m^{\frac{5}{3}}n^2$ $4n^{\frac{9}{4}}m^{\frac{8}{3}}$

5) $2m^4 \cdot 2m^4n^2$
$4m^8n^2$

6) $2y^2 \cdot x^2y^2$
$2y^4x^2$

Simplify. Your answer should contain only positive exponents.

7) $(4uv^3)^{-1}$ $\frac{1}{4uv^3}$

8) $(-2a^4b^{-3})^2$ $\frac{4a^8}{b^6}$

Simplify.

9) $(x^4)^2$
x^8

10) $\left(n^{\frac{3}{4}}\right)^2$ $n^{\frac{3}{2}}$

11) $(4m^4)^4$
$256m^{16}$

12) $(2y^2)^2$
$4y^4$

Simplify. Your answer should contain only positive exponents.

13) $-\frac{3m^2}{4m^3n^4}$ $-\frac{3}{4mn^4}$

14) $-\frac{3u^2v^3}{4v^3}$ $-\frac{3u^2}{4}$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

15) $\frac{2m^3n^{\frac{2}{3}}}{4m^{\frac{1}{2}}n^{\frac{2}{3}}}$ $\frac{m^{\frac{5}{2}}}{2}$

16) $\frac{2b^{\frac{4}{3}}}{4a^2b^{\frac{5}{3}}}$ $\frac{b^{\frac{2}{3}}}{2ba^2}$

Simplify. Your answer should contain only positive exponents.

17) $\frac{3y}{2y^3}$ $\frac{3}{2y^2}$

18) $\frac{2uv^0}{3u^4v^3}$ $\frac{2}{3u^3v^3}$ $= 2u^{-3}v^{-3}$

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4.7 Rational Equations

Date_____ Period____

Solve each equation.

1) $216 = a^{\frac{3}{2}}$

{36}

2) $\frac{1}{10} = p^{-\frac{1}{2}}$

{100}

3) $512 = x^{\frac{3}{2}}$

{64}

4) $x^{\frac{2}{3}} - 1 = 15$

{64, –64}

5) $(x-2)^{\frac{1}{5}} = 2$

{34}

6) $(k+22)^{\frac{2}{3}} = 25$

{103, –147}

7) $-7 - 2(3 - 11m)^{\frac{3}{2}} = -439$

{–3}

8) $-16 = -(-2 - 3n)^{\frac{2}{3}}$

$\left\{-22, \frac{62}{3}\right\}$

9) $1 - 2(10k - 9)^{\frac{3}{2}} = -1457$

{9}

10) $-53 = -2(x+20)^{\frac{2}{3}} - 3$

{105, –145}