Kuta Software - Infinite Algebra 1   Name_____

Adding and Subtracting Radical Expressions   Date_____ Period____

Simplify.

1) $3\sqrt{6} - 4\sqrt{6}$

2) $-3\sqrt{7} + 4\sqrt{7}$

3) $-11\sqrt{21} - 11\sqrt{21}$

4) $-9\sqrt{15} + 10\sqrt{15}$

5) $-10\sqrt{7} + 12\sqrt{7}$

6) $-3\sqrt{17} - 4\sqrt{17}$

7) $-10\sqrt{11} - 11\sqrt{11}$

8) $-2\sqrt{3} + 3\sqrt{27}$

9) $2\sqrt{6} - 2\sqrt{24}$

10) $2\sqrt{6} + 3\sqrt{54}$

11) $-\sqrt{12} + 3\sqrt{3}$

12) $3\sqrt{3} - \sqrt{27}$

13) $3\sqrt{8} + 3\sqrt{2}$

14) $-3\sqrt{6} + 3\sqrt{6}$

15) $-3\sqrt{20} - \sqrt{5}$

16) $2\sqrt{45} - 2\sqrt{5}$

17) $3\sqrt{18} - 2\sqrt{2}$

18) $-3\sqrt{18} + 3\sqrt{8} - \sqrt{24}$

19) $3\sqrt{18} + 3\sqrt{12} + 2\sqrt{27}$

20) $-3\sqrt{5} - \sqrt{6} - \sqrt{5}$

21) $-3\sqrt{2} + 3\sqrt{20} - 3\sqrt{8}$

22) $-3\sqrt{3} - \sqrt{8} - 3\sqrt{3}$

23) $-2\sqrt{20} + 2\sqrt{18} - 2\sqrt{5}$

24) $2\sqrt{18} - 2\sqrt{12} + 2\sqrt{18}$

25) $-\sqrt{45} + 2\sqrt{5} - \sqrt{20} - 2\sqrt{6}$

26) $2\sqrt{20} - \sqrt{20} + 3\sqrt{20} - 2\sqrt{45}$

27) $-3\sqrt{45} + 2\sqrt{12} + 3\sqrt{6} - 3\sqrt{20}$

28) $-\sqrt{27} - 3\sqrt{45} - \sqrt{20} + 2\sqrt{45}$

Name_____

Adding and Subtracting Radical Expressions

Date_____ Period____

Simplify.

1) $3\sqrt{6} - 4\sqrt{6}$

$-\sqrt{6}$

2) $-3\sqrt{7} + 4\sqrt{7}$

$\sqrt{7}$

3) $-11\sqrt{21} - 11\sqrt{21}$

$-22\sqrt{21}$

4) $-9\sqrt{15} + 10\sqrt{15}$

$\sqrt{15}$

5) $-10\sqrt{7} + 12\sqrt{7}$

$2\sqrt{7}$

6) $-3\sqrt{17} - 4\sqrt{17}$

$-7\sqrt{17}$

7) $-10\sqrt{11} - 11\sqrt{11}$

$-21\sqrt{11}$

8) $-2\sqrt{3} + 3\sqrt{27}$

$7\sqrt{3}$

9) $2\sqrt{6} - 2\sqrt{24}$

$-2\sqrt{6}$

10) $2\sqrt{6} + 3\sqrt{54}$

$11\sqrt{6}$

11) $-\sqrt{12} + 3\sqrt{3}$

$\sqrt{3}$

12) $3\sqrt{3} - \sqrt{27}$

0

13) $3\sqrt{8} + 3\sqrt{2}$

    $9\sqrt{2}$

14) $-3\sqrt{6} + 3\sqrt{6}$

    0

15) $-3\sqrt{20} - \sqrt{5}$

    $-7\sqrt{5}$

16) $2\sqrt{45} - 2\sqrt{5}$

    $4\sqrt{5}$

17) $3\sqrt{18} - 2\sqrt{2}$

    $7\sqrt{2}$

18) $-3\sqrt{18} + 3\sqrt{8} - \sqrt{24}$

    $-3\sqrt{2} - 2\sqrt{6}$

19) $3\sqrt{18} + 3\sqrt{12} + 2\sqrt{27}$

    $9\sqrt{2} + 12\sqrt{3}$

20) $-3\sqrt{5} - \sqrt{6} - \sqrt{5}$

    $-4\sqrt{5} - \sqrt{6}$

21) $-3\sqrt{2} + 3\sqrt{20} - 3\sqrt{8}$

    $-9\sqrt{2} + 6\sqrt{5}$

22) $-3\sqrt{3} - \sqrt{8} - 3\sqrt{3}$

    $-6\sqrt{3} - 2\sqrt{2}$

23) $-2\sqrt{20} + 2\sqrt{18} - 2\sqrt{5}$

    $-6\sqrt{5} + 6\sqrt{2}$

24) $2\sqrt{18} - 2\sqrt{12} + 2\sqrt{18}$

    $12\sqrt{2} - 4\sqrt{3}$

25) $-\sqrt{45} + 2\sqrt{5} - \sqrt{20} - 2\sqrt{6}$

    $-3\sqrt{5} - 2\sqrt{6}$

26) $2\sqrt{20} - \sqrt{20} + 3\sqrt{20} - 2\sqrt{45}$

    $2\sqrt{5}$

27) $-3\sqrt{45} + 2\sqrt{12} + 3\sqrt{6} - 3\sqrt{20}$

    $-15\sqrt{5} + 4\sqrt{3} + 3\sqrt{6}$

28) $-\sqrt{27} - 3\sqrt{45} - \sqrt{20} + 2\sqrt{45}$

    $-3\sqrt{3} - 5\sqrt{5}$

Name_____

Adding + Subtracting Rational Expressions

Date_____ Period____

Simplify each expression.

1) $\dfrac{u + 5v}{8v^2u^2} - \dfrac{u - 6v}{8v^2u^2}$

2) $\dfrac{5n}{30m} + \dfrac{2m + 4n}{30m}$

3) $\dfrac{a + 2b}{6a^3} - \dfrac{5a + 4b}{6a^3}$

4) $\dfrac{x + y}{18xy} - \dfrac{6x + y}{18xy}$

5) $\dfrac{4a - 5}{6a^2 + 30a} + \dfrac{a - 1}{6a^2 + 30a}$

6) $\dfrac{5x - 4}{9x^3 + 27x^2} - \dfrac{x + 6}{9x^3 + 27x^2}$

7) $\dfrac{b - 3}{12b + 18} + \dfrac{4b}{12b + 18}$

8) $\dfrac{n - 4}{n^2 - n - 20} + \dfrac{n + 1}{n^2 - n - 20}$

9) $\dfrac{7x}{2x} - \dfrac{x - 2}{20x + 16}$

10) $\dfrac{8}{7v - 6} + \dfrac{4}{3v^2}$

11) $\dfrac{7v}{8} - \dfrac{8v-4}{5v-2}$

12) $\dfrac{4}{n+7} - \dfrac{7}{n-2}$

13) $\dfrac{7}{3n^2+24n} - \dfrac{7}{2n}$

14) $\dfrac{6}{v-2} - \dfrac{7}{2v+7}$

15) $\dfrac{6x}{3} + \dfrac{7}{15x+3}$

16) $\dfrac{5v}{v-3} + \dfrac{5}{v+6}$

17) $\dfrac{4x}{x^2+4x-5} - \dfrac{5}{4}$

18) $\dfrac{2}{x+3} - \dfrac{6x}{2x+1}$

19) $\dfrac{4x}{x+3} - \dfrac{4x}{x+6}$

20) $\dfrac{2x}{3x+3} - \dfrac{2}{x+5}$

21) $\dfrac{6}{x-2} + \dfrac{6}{x+1}$

22) $\dfrac{v-2}{3v^4-15v^3-18v^2} + 3v$

Name_____

Adding + Subtracting Rational Expressions

Date_____ Period_____

Simplify each expression.

1) $\dfrac{u + 5v}{8v^2u^2} - \dfrac{u - 6v}{8v^2u^2}$

$\dfrac{11}{8vu^2}$

2) $\dfrac{5n}{30m} + \dfrac{2m + 4n}{30m}$

$\dfrac{9n + 2m}{30m}$

3) $\dfrac{a + 2b}{6a^3} - \dfrac{5a + 4b}{6a^3}$

$\dfrac{-2a - b}{3a^3}$

4) $\dfrac{x + y}{18xy} - \dfrac{6x + y}{18xy}$

$-\dfrac{5}{18y}$

5) $\dfrac{4a - 5}{6a^2 + 30a} + \dfrac{a - 1}{6a^2 + 30a}$

$\dfrac{5a - 6}{6a^2 + 30a}$

6) $\dfrac{5x - 4}{9x^3 + 27x^2} - \dfrac{x + 6}{9x^3 + 27x^2}$

$\dfrac{4x - 10}{9x^3 + 27x^2}$

7) $\dfrac{b - 3}{12b + 18} + \dfrac{4b}{12b + 18}$

$\dfrac{5b - 3}{12b + 18}$

8) $\dfrac{n - 4}{n^2 - n - 20} + \dfrac{n + 1}{n^2 - n - 20}$

$\dfrac{2n - 3}{n^2 - n - 20}$

9) $\dfrac{7x}{2x} - \dfrac{x - 2}{20x + 16}$

$\dfrac{69x + 58}{4(5x + 4)}$

10) $\dfrac{8}{7v - 6} + \dfrac{4}{3v^2}$

$\dfrac{24v^2 + 28v - 24}{3v^2(7v - 6)}$

11) $\dfrac{7v}{8} - \dfrac{8v-4}{5v-2}$

$\dfrac{35v^2 - 78v + 32}{8(5v-2)}$

12) $\dfrac{4}{n+7} - \dfrac{7}{n-2}$

$\dfrac{-3n-57}{(n+7)(n-2)}$

13) $\dfrac{7}{3n^2 + 24n} - \dfrac{7}{2n}$

$\dfrac{-154 - 21n}{6n(n+8)}$

14) $\dfrac{6}{v-2} - \dfrac{7}{2v+7}$

$\dfrac{5v + 56}{(2v+7)(v-2)}$

15) $\dfrac{6x}{3} + \dfrac{7}{15x + 3}$

$\dfrac{30x^2 + 6x + 7}{3(5x+1)}$

16) $\dfrac{5v}{v-3} + \dfrac{5}{v+6}$

$\dfrac{5v^2 + 35v - 15}{(v+6)(v-3)}$

17) $\dfrac{4x}{x^2 + 4x - 5} - \dfrac{5}{4}$

$\dfrac{-4x - 5x^2 + 25}{4(x+5)(x-1)}$

18) $\dfrac{2}{x+3} - \dfrac{6x}{2x+1}$

$\dfrac{-14x + 2 - 6x^2}{(2x+1)(x+3)}$

19) $\dfrac{4x}{x+3} - \dfrac{4x}{x+6}$

$\dfrac{12x}{(x+3)(x+6)}$

20) $\dfrac{2x}{3x+3} - \dfrac{2}{x+5}$

$\dfrac{2x^2 + 4x - 6}{3(x+1)(x+5)}$

21) $\dfrac{6}{x-2} + \dfrac{6}{x+1}$

$\dfrac{12x - 6}{(x+1)(x-2)}$

22) $\dfrac{v-2}{3v^4 - 15v^3 - 18v^2} + 3v$

$\dfrac{9v^5 - 45v^4 - 54v^3 + v - 2}{3v^2(v+1)(v-6)}$

Dividing Polynomials

Divide.

1) $(m^2 - 7m - 11) \div (m - 8)$

2) $(n^2 - n - 29) \div (n - 6)$

3) $(n^2 + 10n + 18) \div (n + 5)$

4) $(k^2 - 7k + 10) \div (k - 1)$

5) $(n^2 - 3n - 21) \div (n - 7)$

6) $(a^2 - 28) \div (a - 5)$

7) $(r^2 + 14r + 38) \div (r + 8)$

8) $(x^2 + 5x + 3) \div (x + 6)$

9) $(2x^2 - 17x - 38) \div (2x + 3)$

10) $(42x^2 - 33) \div (7x + 7)$

11) $(x^2 - 74) \div (x - 8)$

12) $(2p^2 + 7p - 39) \div (2p - 7)$

13) $(n^3 + 7n^2 + 14n + 3) \div (n + 2)$

14) $(p^3 - 10p^2 + 20p + 26) \div (p - 5)$

15) $(v^3 - 2v^2 - 14v - 5) \div (v + 3)$

16) $(x^3 - 13x^2 + 40x + 18) \div (x - 7)$

17) $(k^3 - 30k - 18 - 4k^2) \div (3 + k)$

18) $(-5k^2 + k^3 + 8k + 4) \div (-1 + k)$

19) $(x^3 + 5x^2 - 32x - 7) \div (x - 4)$

20) $(50k^3 + 10k^2 - 35k - 7) \div (5k - 4)$

Name_____

Dividing Polynomials

Date_____ Period____

Divide.

1) $(m^2 - 7m - 11) \div (m - 8)$

$$m + 1 - \frac{3}{m - 8}$$

2) $(n^2 - n - 29) \div (n - 6)$

$$n + 5 + \frac{1}{n - 6}$$

3) $(n^2 + 10n + 18) \div (n + 5)$

$$n + 5 - \frac{7}{n + 5}$$

4) $(k^2 - 7k + 10) \div (k - 1)$

$$k - 6 + \frac{4}{k - 1}$$

5) $(n^2 - 3n - 21) \div (n - 7)$

$$n + 4 + \frac{7}{n - 7}$$

6) $(a^2 - 28) \div (a - 5)$

$$a + 5 - \frac{3}{a - 5}$$

7) $(r^2 + 14r + 38) \div (r + 8)$

$$r + 6 - \frac{10}{r + 8}$$

8) $(x^2 + 5x + 3) \div (x + 6)$

$$x - 1 + \frac{9}{x + 6}$$

9) $(2x^2 - 17x - 38) \div (2x + 3)$

$$x - 10 - \frac{8}{2x + 3}$$

10) $(42x^2 - 33) \div (7x + 7)$

$$6x - 6 + \frac{9}{7x + 7}$$

11) $(x^2 - 74) \div (x - 8)$

$$x + 8 - \frac{10}{x - 8}$$

12) $(2p^2 + 7p - 39) \div (2p - 7)$

$$p + 7 + \frac{10}{2p - 7}$$

13) $(n^3 + 7n^2 + 14n + 3) \div (n + 2)$

$$n^2 + 5n + 4 - \frac{5}{n + 2}$$

14) $(p^3 - 10p^2 + 20p + 26) \div (p - 5)$

$$p^2 - 5p - 5 + \frac{1}{p - 5}$$

15) $(v^3 - 2v^2 - 14v - 5) \div (v + 3)$

$$v^2 - 5v + 1 - \frac{8}{v + 3}$$

16) $(x^3 - 13x^2 + 40x + 18) \div (x - 7)$

$$x^2 - 6x - 2 + \frac{4}{x - 7}$$

17) $(k^3 - 30k - 18 - 4k^2) \div (3 + k)$

$$k^2 - 7k - 9 + \frac{9}{3 + k}$$

18) $(-5k^2 + k^3 + 8k + 4) \div (-1 + k)$

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

19) $(x^3 + 5x^2 - 32x - 7) \div (x - 4)$

$$x^2 + 9x + 4 + \frac{9}{x - 4}$$

20) $(50k^3 + 10k^2 - 35k - 7) \div (5k - 4)$

$$10k^2 + 10k + 1 - \frac{3}{5k - 4}$$

Name_____

Dividing Radical Expressions

Date_____ Period____

Simplify.

1) $\dfrac{\sqrt{15}}{5\sqrt{20}}$

2) $\dfrac{\sqrt{8}}{\sqrt{100}}$

3) $\dfrac{\sqrt{6}}{\sqrt{27}}$

4) $\dfrac{3\sqrt{20}}{2\sqrt{4}}$

5) $\dfrac{4}{\sqrt{5}}$

6) $\dfrac{\sqrt{4}}{5\sqrt{3}}$

7) $\dfrac{\sqrt{5}}{\sqrt{3}}$

8) $\dfrac{\sqrt{2}}{2\sqrt{3}}$

9) $\dfrac{\sqrt{3x^2y^3}}{4\sqrt{5xy^3}}$

10) $\dfrac{\sqrt{15xy}}{3\sqrt{10xy^3}}$

11) $\dfrac{3 - 3\sqrt{3a}}{4\sqrt{8a}}$

12) $\dfrac{3n^2 + \sqrt{2n^2}}{\sqrt{10n}}$

13) $\dfrac{4x^3 - 3\sqrt{3x}}{3\sqrt{3x^2}}$

14) $\dfrac{\sqrt{5k^4} + 3\sqrt{2k}}{\sqrt{3k^3}}$

15) $\dfrac{3}{4 + 4\sqrt{5}}$

16) $\dfrac{5}{-5 - 3\sqrt{3}}$

17) $\dfrac{5}{-3 - 3\sqrt{3}}$

18) $\dfrac{4}{\sqrt{2} - 5\sqrt{3}}$

19) $\dfrac{2 + 5\sqrt{3}}{-4 + 4\sqrt{2}}$

20) $\dfrac{\sqrt{5} + 2\sqrt{2}}{4 - \sqrt{5}}$

21) $\dfrac{\sqrt{5} + 3}{4 - \sqrt{5}}$

22) $\dfrac{3 - 4\sqrt{3}}{4\sqrt{5} + 3\sqrt{2}}$

Name_____

Dividing Radical Expressions

Date_____ Period____

Simplify.

1) $\dfrac{\sqrt{15}}{5\sqrt{20}}$

$\dfrac{\sqrt{3}}{10}$

2) $\dfrac{\sqrt{8}}{\sqrt{100}}$

$\dfrac{\sqrt{2}}{5}$

3) $\dfrac{\sqrt{6}}{\sqrt{27}}$

$\dfrac{\sqrt{2}}{3}$

4) $\dfrac{3\sqrt{20}}{2\sqrt{4}}$

$\dfrac{3\sqrt{5}}{2}$

5) $\dfrac{4}{\sqrt{5}}$

$\dfrac{4\sqrt{5}}{5}$

6) $\dfrac{\sqrt{4}}{5\sqrt{3}}$

$\dfrac{2\sqrt{3}}{15}$

7) $\dfrac{\sqrt{5}}{\sqrt{3}}$

$\dfrac{\sqrt{15}}{3}$

8) $\dfrac{\sqrt{2}}{2\sqrt{3}}$

$\dfrac{\sqrt{6}}{6}$

9) $\dfrac{\sqrt{3x^2y^3}}{4\sqrt{5xy^3}}$

$\dfrac{\sqrt{15x}}{20}$

10) $\dfrac{\sqrt{15xy}}{3\sqrt{10xy^3}}$

$\dfrac{\sqrt{6}}{6y}$

11) $\dfrac{3 - 3\sqrt{3a}}{4\sqrt{8a}}$

$\dfrac{3\sqrt{2a} - 3a\sqrt{6}}{16a}$

12) $\dfrac{3n^2 + \sqrt{2n^2}}{\sqrt{10n}}$

$\dfrac{3n\sqrt{10n} + 2\sqrt{5n}}{10}$

13) $\dfrac{4x^3 - 3\sqrt{3x}}{3\sqrt{3x^2}}$

$\dfrac{4x^3\sqrt{3} - 9\sqrt{x}}{9x}$

14) $\dfrac{\sqrt{5k^4} + 3\sqrt{2k}}{\sqrt{3k^3}}$

$\dfrac{k\sqrt{15k} + 3\sqrt{6}}{3k}$

15) $\dfrac{3}{4 + 4\sqrt{5}}$

$\dfrac{-3 + 3\sqrt{5}}{16}$

16) $\dfrac{5}{-5 - 3\sqrt{3}}$

$\dfrac{25 - 15\sqrt{3}}{2}$

17) $\dfrac{5}{-3 - 3\sqrt{3}}$

$\dfrac{5 - 5\sqrt{3}}{6}$

18) $\dfrac{4}{\sqrt{2} - 5\sqrt{3}}$

$\dfrac{-4\sqrt{2} - 20\sqrt{3}}{73}$

19) $\dfrac{2 + 5\sqrt{3}}{-4 + 4\sqrt{2}}$

$\dfrac{2 + 2\sqrt{2} + 5\sqrt{3} + 5\sqrt{6}}{4}$

20) $\dfrac{\sqrt{5} + 2\sqrt{2}}{4 - \sqrt{5}}$

$\dfrac{4\sqrt{5} + 5 + 8\sqrt{2} + 2\sqrt{10}}{11}$

21) $\dfrac{\sqrt{5} + 3}{4 - \sqrt{5}}$

$\dfrac{7\sqrt{5} + 17}{11}$

22) $\dfrac{3 - 4\sqrt{3}}{4\sqrt{5} + 3\sqrt{2}}$

$\dfrac{12\sqrt{5} - 9\sqrt{2} - 16\sqrt{15} + 12\sqrt{6}}{62}$

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Dividing Rational Expressions

Simplify each expression.

1) $\dfrac{10n}{9} \div \dfrac{13n^2}{16}$

2) $\dfrac{16n}{17} \div \dfrac{8n}{6}$

3) $\dfrac{2}{7} \div \dfrac{18}{8x^2}$

4) $\dfrac{12}{7} \div \dfrac{4}{11r}$

5) $\dfrac{7}{18} \div \dfrac{6}{9a}$

6) $\dfrac{5}{20} \div \dfrac{5x}{3}$

7) $\dfrac{4n}{n-6} \div \dfrac{4n}{8n-48}$

8) $\dfrac{3}{28b} \div \dfrac{3}{b+1}$

9) $\dfrac{7a^2}{7a^3+56a^2} \div \dfrac{2}{a^2+7a-8}$

10) $\dfrac{6}{28x+4} \div \dfrac{6}{35x+5}$

11) $\dfrac{x^2 + 10x + 16}{x^2 + 6x + 8} \div \dfrac{1}{x + 4}$

12) $\dfrac{49x + 21}{6x} \div \dfrac{42x + 18}{6}$

13) $\dfrac{7}{8r - 40} \div \dfrac{1}{8r - 40}$

14) $\dfrac{1}{2a} \div \dfrac{8a}{2a^2 + 16a}$

15) $\dfrac{8}{4n^2 - 16n} \div \dfrac{1}{n - 4}$

16) $\dfrac{a - 4}{a^2 - 2a - 8} \div \dfrac{1}{a - 5}$

17) $\dfrac{b^2 - 2b - 15}{8b + 20} \div \dfrac{2}{4b + 10}$

18) $\dfrac{10b^2 + 42b + 36}{6b^2 - 2b - 60} \div \dfrac{40b + 48}{3b^2 - 13b + 10}$

19) $\dfrac{16x - 56}{8} \div \dfrac{8x - 28}{4}$

20) $\dfrac{10x^2 - 28x + 16}{2x - 4} \div \dfrac{25x^2 - 25x + 4}{5x^2 - 41x + 8}$

21) $\dfrac{6p + 27}{18p^2 + 36p} \div \dfrac{16p + 72}{2p + 4}$

22) $\dfrac{3x^2 - 25x - 18}{27x + 18} \div \dfrac{5x - 3}{5x^2 - 33x + 18}$

Name_____

Dividing Rational Expressions

Date_____ Period____

Simplify each expression.

1) $\dfrac{10n}{9} \div \dfrac{13n^2}{16}$

$\dfrac{160}{117n}$

2) $\dfrac{16n}{17} \div \dfrac{8n}{6}$

$\dfrac{12}{17}$

3) $\dfrac{2}{7} \div \dfrac{18}{8x^2}$

$\dfrac{8x^2}{63}$

4) $\dfrac{12}{7} \div \dfrac{4}{11r}$

$\dfrac{33r}{7}$

5) $\dfrac{7}{18} \div \dfrac{6}{9a}$

$\dfrac{7a}{12}$

6) $\dfrac{5}{20} \div \dfrac{5x}{3}$

$\dfrac{3}{20x}$

7) $\dfrac{4n}{n-6} \div \dfrac{4n}{8n-48}$

8

8) $\dfrac{3}{28b} \div \dfrac{3}{b+1}$

$\dfrac{b+1}{28b}$

9) $\dfrac{7a^2}{7a^3 + 56a^2} \div \dfrac{2}{a^2 + 7a - 8}$

$\dfrac{a-1}{2}$

10) $\dfrac{6}{28x+4} \div \dfrac{6}{35x+5}$

$\dfrac{5}{4}$

11) $\dfrac{x^2 + 10x + 16}{x^2 + 6x + 8} \div \dfrac{1}{x + 4}$

$x + 8$

12) $\dfrac{49x + 21}{6x} \div \dfrac{42x + 18}{6}$

$\dfrac{7}{6x}$

13) $\dfrac{7}{8r - 40} \div \dfrac{1}{8r - 40}$

7

14) $\dfrac{1}{2a} \div \dfrac{8a}{2a^2 + 16a}$

$\dfrac{a + 8}{8a}$

15) $\dfrac{8}{4n^2 - 16n} \div \dfrac{1}{n - 4}$

$\dfrac{2}{n}$

16) $\dfrac{a - 4}{a^2 - 2a - 8} \div \dfrac{1}{a - 5}$

$\dfrac{a - 5}{a + 2}$

17) $\dfrac{b^2 - 2b - 15}{8b + 20} \div \dfrac{2}{4b + 10}$

$\dfrac{(b + 3)(b - 5)}{4}$

18) $\dfrac{10b^2 + 42b + 36}{6b^2 - 2b - 60} \div \dfrac{40b + 48}{3b^2 - 13b + 10}$

$\dfrac{b - 1}{8}$

19) $\dfrac{16x - 56}{8} \div \dfrac{8x - 28}{4}$

1

20) $\dfrac{10x^2 - 28x + 16}{2x - 4} \div \dfrac{25x^2 - 25x + 4}{5x^2 - 41x + 8}$

$x - 8$

21) $\dfrac{6p + 27}{18p^2 + 36p} \div \dfrac{16p + 72}{2p + 4}$

$\dfrac{1}{24p}$

22) $\dfrac{3x^2 - 25x - 18}{27x + 18} \div \dfrac{5x - 3}{5x^2 - 33x + 18}$

$\dfrac{(x - 9)(x - 6)}{9}$

Name_____

Factoring: All Techniques Combined (Hard)

Date_____ Period____

Factor each.

1) $x^3 - 5x^2 - x + 5$

2) $x^4 - 2x^2 - 15$

3) $x^6 - 26x^3 - 27$

4) $x^6 + 2x^4 - 16x^2 - 32$

5) $x^4 - 13x^2 + 40$

6) $x^9 - x^6 - x^3 + 1$

7) $x^6 - 4x^2$

8) $x^4 + 14x^2 + 45$

9) $2x^4 + x^2 - 6$

10) $2x^2 - 13x + 20$

11) $4x^3 - x^2 - 4x + 1$

12) $4x^8 - 61x^4 + 225$

13) $5x^2 + 24x - 5$

14) $5x^2 + 29x + 20$

15) $4x^2 + 4x - 15$

16) $10x^3 - 8x^2 + 25x - 20$

17) $-64x^3 + 125 = 0$

18) $8x^4 + 10x^2 - 3$

Name_____

Factoring: All Techniques Combined (Hard)

Date_____ Period____

Factor each.

1) $x^3 - 5x^2 - x + 5$

$(x - 5)(x + 1)(x - 1)$

2) $x^4 - 2x^2 - 15$

$(x^2 - 5)(x^2 + 3)$

3) $x^6 - 26x^3 - 27$

$(x - 3)(x^2 + 3x + 9)(x + 1)(x^2 - x + 1)$

4) $x^6 + 2x^4 - 16x^2 - 32$

$(x^2 + 2)(x^2 + 4)(x + 2)(x - 2)$

5) $x^4 - 13x^2 + 40$

$(x^2 - 5)(x^2 - 8)$

6) $x^9 - x^6 - x^3 + 1$

$(x - 1)^2(x^2 + x + 1)^2(x + 1)(x^2 - x + 1)$

7) $x^6 - 4x^2$

$x^2(x^2 - 2)(x^2 + 2)$

8) $x^4 + 14x^2 + 45$

$(x^2 + 5)(x^2 + 9)$

9) $2x^4 + x^2 - 6$

$(2x^2 - 3)(x^2 + 2)$

10) $2x^2 - 13x + 20$

$(2x - 5)(x - 4)$

11) $4x^3 - x^2 - 4x + 1$

$(4x - 1)(x + 1)(x - 1)$

12) $4x^8 - 61x^4 + 225$

$(2x^2 + 5)(2x^2 - 5)(x^2 + 3)(x^2 - 3)$

13) $5x^2 + 24x - 5$

$(5x - 1)(x + 5)$

14) $5x^2 + 29x + 20$

$(5x + 4)(x + 5)$

15) $4x^2 + 4x - 15$

$(2x - 3)(2x + 5)$

16) $10x^3 - 8x^2 + 25x - 20$

$(5x - 4)(2x^2 + 5)$

17) $-64x^3 + 125 = 0$

$(4x - 5)(-16x^2 - 20x - 25) = 0$

18) $8x^4 + 10x^2 - 3$

$(2x + 1)(2x - 1)(2x^2 + 3)$

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Name_____

Multiplying Rational Expressions

Date_____ Period____

Simplify each expression.

1) $\dfrac{59n}{99} \cdot \dfrac{80}{33n}$

2) $\dfrac{53}{43} \cdot \dfrac{46n^2}{31}$

3) $\dfrac{93}{21n} \cdot \dfrac{34n}{51n}$

4) $\dfrac{79n}{25} \cdot \dfrac{85}{27n^2}$

5) $\dfrac{96}{38n} \cdot \dfrac{25}{45}$

6) $\dfrac{84}{3} \cdot \dfrac{48x}{95}$

7) $\dfrac{6(r+2)}{20} \cdot \dfrac{4r}{6(r+2)}$

8) $\dfrac{7n^2(n+4)}{(n-3)(n+4)} \cdot \dfrac{n-3}{(n+8)(n+6)}$

9) $\dfrac{2(p+6)}{4} \cdot \dfrac{p-3}{2(p-3)}$

10) $\dfrac{9(r+4)}{r+4} \cdot \dfrac{9r}{9(r-5)}$

11) $\dfrac{8(m+1)}{7m} \cdot \dfrac{9}{8(m+1)}$

12) $\dfrac{(p+6)(p-4)}{p-4} \cdot \dfrac{1}{(p-4)(p-2)}$

13) $\dfrac{1}{v+10} \cdot \dfrac{10v+30}{v+3}$

14) $\dfrac{7n}{24n^3-64n^2} \cdot \dfrac{9n-24}{7n}$

15) $\dfrac{x+7}{7x+35} \cdot \dfrac{x^2-3x-40}{x-8}$

16) $\dfrac{20a^2-100a}{a-1} \cdot \dfrac{1}{16a^3-80a^2}$

17) $\dfrac{3b^2+18b}{b+6} \cdot \dfrac{1}{b+8}$

18) $\dfrac{p+7}{p-10} \cdot \dfrac{p+2}{7p+14}$

19) $\dfrac{21x^2-21x}{18x^2-18x} \cdot \dfrac{6x}{6x^2}$

20) $\dfrac{1}{p-9} \cdot \dfrac{p^2+6p-27}{p+9}$

21) $\dfrac{v-7}{v+6} \cdot \dfrac{10v+60}{v-7}$

22) $\dfrac{5r+50}{r+10} \cdot \dfrac{r-2}{5}$

23) $\dfrac{x^2-10x+25}{10x-100} \cdot \dfrac{x-10}{45-9x}$

24) $\dfrac{45x^2}{x-9} \cdot \dfrac{x^2-5x-36}{3x^3+12x^2}$

25) $\dfrac{8v-56}{8v+48} \cdot \dfrac{v^2+9v+18}{8v^2+24v}$

26) $\dfrac{9r^3-54r^2}{9r^2+45r} \cdot \dfrac{9r^2+9r}{9r^3-54r^2}$

27) $\dfrac{m+1}{3m-15} \cdot \dfrac{8m-80}{m^2-9m-10}$

28) $\dfrac{6n+6}{n+9} \cdot \dfrac{n^2+6n-27}{6n+6}$

Name_____

Multiplying Rational Expressions

Date_____ Period____

Simplify each expression.

1) $\dfrac{59n}{99} \cdot \dfrac{80}{33n}$

$\dfrac{4720}{3267}$

2) $\dfrac{53}{43} \cdot \dfrac{46n^2}{31}$

$\dfrac{2438n^2}{1333}$

3) $\dfrac{93}{21n} \cdot \dfrac{34n}{51n}$

$\dfrac{62}{21n}$

4) $\dfrac{79n}{25} \cdot \dfrac{85}{27n^2}$

$\dfrac{1343}{135n}$

5) $\dfrac{96}{38n} \cdot \dfrac{25}{45}$

$\dfrac{80}{57n}$

6) $\dfrac{84}{3} \cdot \dfrac{48x}{95}$

$\dfrac{1344x}{95}$

7) $\dfrac{6(r+2)}{20} \cdot \dfrac{4r}{6(r+2)}$

$\dfrac{r}{5}$

8) $\dfrac{7n^2(n+4)}{(n-3)(n+4)} \cdot \dfrac{n-3}{(n+8)(n+6)}$

$\dfrac{7n^2}{(n+8)(n+6)}$

9) $\dfrac{2(p+6)}{4} \cdot \dfrac{p-3}{2(p-3)}$

$\dfrac{p+6}{4}$

10) $\dfrac{9(r+4)}{r+4} \cdot \dfrac{9r}{9(r-5)}$

$\dfrac{9r}{r-5}$

11) $\dfrac{8(m+1)}{7m} \cdot \dfrac{9}{8(m+1)}$

$\dfrac{9}{7m}$

12) $\dfrac{(p+6)(p-4)}{p-4} \cdot \dfrac{1}{(p-4)(p-2)}$

$\dfrac{p+6}{(p-4)(p-2)}$

13) $\dfrac{1}{v+10} \cdot \dfrac{10v+30}{v+3}$

$\dfrac{10}{v+10}$

14) $\dfrac{7n}{24n^3-64n^2} \cdot \dfrac{9n-24}{7n}$

$\dfrac{3}{8n^2}$

15) $\dfrac{x+7}{7x+35} \cdot \dfrac{x^2-3x-40}{x-8}$

$\dfrac{x+7}{7}$

16) $\dfrac{20a^2-100a}{a-1} \cdot \dfrac{1}{16a^3-80a^2}$

$\dfrac{5}{4a(a-1)}$

17) $\dfrac{3b^2+18b}{b+6} \cdot \dfrac{1}{b+8}$

$\dfrac{3b}{b+8}$

18) $\dfrac{p+7}{p-10} \cdot \dfrac{p+2}{7p+14}$

$\dfrac{p+7}{7(p-10)}$

19) $\dfrac{21x^2-21x}{18x^2-18x} \cdot \dfrac{6x}{6x^2}$

$\dfrac{7}{6x}$

20) $\dfrac{1}{p-9} \cdot \dfrac{p^2+6p-27}{p+9}$

$\dfrac{p-3}{p-9}$

21) $\dfrac{v-7}{v+6} \cdot \dfrac{10v+60}{v-7}$

10

22) $\dfrac{5r+50}{r+10} \cdot \dfrac{r-2}{5}$

$r-2$

23) $\dfrac{x^2-10x+25}{10x-100} \cdot \dfrac{x-10}{45-9x}$

$-\dfrac{(x-5)}{90}$

24) $\dfrac{45x^2}{x-9} \cdot \dfrac{x^2-5x-36}{3x^3+12x^2}$

15

25) $\dfrac{8v-56}{8v+48} \cdot \dfrac{v^2+9v+18}{8v^2+24v}$

$\dfrac{v-7}{8v}$

26) $\dfrac{9r^3-54r^2}{9r^2+45r} \cdot \dfrac{9r^2+9r}{9r^3-54r^2}$

$\dfrac{r+1}{r+5}$

27) $\dfrac{m+1}{3m-15} \cdot \dfrac{8m-80}{m^2-9m-10}$

$\dfrac{8}{3(m-5)}$

28) $\dfrac{6n+6}{n+9} \cdot \dfrac{n^2+6n-27}{6n+6}$

$n-3$

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Name_____

Solving Quadratic Equations by Factoring

Date_____ Period____

Solve each equation by factoring.

1) $(k+1)(k-5)=0$

2) $(a+1)(a+2)=0$

3) $(4k+5)(k+1)=0$

4) $(2m+3)(4m+3)=0$

5) $x^2-11x+19=-5$

6) $n^2+7n+15=5$

7) $n^2-10n+22=-2$

8) $n^2+3n-12=6$

9) $6n^2-18n-18=6$

10) $7r^2-14r=-7$

11) $n^2 + 8n = -15$

12) $5r^2 - 44r + 120 = -30 + 11r$

13) $-4k^2 - 8k - 3 = -3 - 5k^2$

14) $b^2 + 5b - 35 = 3b$

15) $3r^2 - 16r - 7 = 5$

16) $6b^2 - 13b + 3 = -3$

17) $7k^2 - 6k + 3 = 3$

18) $35k^2 - 22k + 7 = 4$

19) $7x^2 + 2x = 0$

20) $10b^2 = 27b - 18$

21) $8x^2 + 21 = -59x$

22) $15a^2 - 3a = 3 - 7a$

Kuta Software - Infinite Algebra 1					Name_____

Solving Quadratic Equations by Factoring

Date_____ Period____

Solve each equation by factoring.

1) $(k+1)(k-5)=0$

$\{-1, 5\}$

2) $(a+1)(a+2)=0$

$\{-1, -2\}$

3) $(4k+5)(k+1)=0$

$\left\{-\dfrac{5}{4}, -1\right\}$

4) $(2m+3)(4m+3)=0$

$\left\{-\dfrac{3}{2}, -\dfrac{3}{4}\right\}$

5) $x^2 - 11x + 19 = -5$

$\{3, 8\}$

6) $n^2 + 7n + 15 = 5$

$\{-5, -2\}$

7) $n^2 - 10n + 22 = -2$

$\{6, 4\}$

8) $n^2 + 3n - 12 = 6$

$\{3, -6\}$

9) $6n^2 - 18n - 18 = 6$

$\{4, -1\}$

10) $7r^2 - 14r = -7$

$\{1\}$

11) $n^2 + 8n = -15$

$\{-5, -3\}$

12) $5r^2 - 44r + 120 = -30 + 11r$

$\{6, 5\}$

13) $-4k^2 - 8k - 3 = -3 - 5k^2$

$\{8, 0\}$

14) $b^2 + 5b - 35 = 3b$

$\{-7, 5\}$

15) $3r^2 - 16r - 7 = 5$

$\left\{-\dfrac{2}{3}, 6\right\}$

16) $6b^2 - 13b + 3 = -3$

$\left\{\dfrac{2}{3}, \dfrac{3}{2}\right\}$

17) $7k^2 - 6k + 3 = 3$

$\left\{\dfrac{6}{7}, 0\right\}$

18) $35k^2 - 22k + 7 = 4$

$\left\{\dfrac{1}{5}, \dfrac{3}{7}\right\}$

19) $7x^2 + 2x = 0$

$\left\{-\dfrac{2}{7}, 0\right\}$

20) $10b^2 = 27b - 18$

$\left\{\dfrac{6}{5}, \dfrac{3}{2}\right\}$

21) $8x^2 + 21 = -59x$

$\left\{-\dfrac{3}{8}, -7\right\}$

22) $15a^2 - 3a = 3 - 7a$ $\left\{\dfrac{1}{3}, -\dfrac{3}{5}\right\}$

Name_____

Using the Quadratic Formula

Date_____ Period____

Solve each equation with the quadratic formula.

1) $m^2 - 5m - 14 = 0$

2) $b^2 - 4b + 4 = 0$

3) $2m^2 + 2m - 12 = 0$

4) $2x^2 - 3x - 5 = 0$

5) $x^2 + 4x + 3 = 0$

6) $2x^2 + 3x - 20 = 0$

7) $4b^2 + 8b + 7 = 4$

8) $2m^2 - 7m - 13 = -10$

9) $2x^2 - 3x - 15 = 5$

10) $x^2 + 2x - 1 = 2$

11) $2k^2 + 9k = -7$

12) $5r^2 = 80$

13) $2x^2 - 36 = x$

14) $5x^2 + 9x = -4$

15) $k^2 - 31 - 2k = -6 - 3k^2 - 2k$

16) $9n^2 = 4 + 7n$

17) $8n^2 + 4n - 16 = -n^2$

18) $8n^2 + 7n - 15 = -7$

Name_____

Using the Quadratic Formula

Date_____ Period____

Solve each equation with the quadratic formula.

1) $m^2 - 5m - 14 = 0$

$\{7, -2\}$

2) $b^2 - 4b + 4 = 0$

$\{2\}$

3) $2m^2 + 2m - 12 = 0$

$\{2, -3\}$

4) $2x^2 - 3x - 5 = 0$

$\left\{\dfrac{5}{2}, -1\right\}$

5) $x^2 + 4x + 3 = 0$

$\{-1, -3\}$

6) $2x^2 + 3x - 20 = 0$

$\left\{\dfrac{5}{2}, -4\right\}$

7) $4b^2 + 8b + 7 = 4$

$\left\{-\dfrac{1}{2}, -\dfrac{3}{2}\right\}$

8) $2m^2 - 7m - 13 = -10$

$\left\{\dfrac{7 + \sqrt{73}}{4}, \dfrac{7 - \sqrt{73}}{4}\right\}$

9) $2x^2 - 3x - 15 = 5$

$$\left\{4, -\frac{5}{2}\right\}$$

10) $x^2 + 2x - 1 = 2$

$$\{1, -3\}$$

11) $2k^2 + 9k = -7$

$$\left\{-1, -\frac{7}{2}\right\}$$

12) $5r^2 = 80$

$$\{4, -4\}$$

13) $2x^2 - 36 = x$

$$\left\{\frac{9}{2}, -4\right\}$$

14) $5x^2 + 9x = -4$

$$\left\{-\frac{4}{5}, -1\right\}$$

15) $k^2 - 31 - 2k = -6 - 3k^2 - 2k$

$$\left\{\frac{5}{2}, -\frac{5}{2}\right\}$$

16) $9n^2 = 4 + 7n$

$$\left\{\frac{7 + \sqrt{193}}{18}, \frac{7 - \sqrt{193}}{18}\right\}$$

17) $8n^2 + 4n - 16 = -n^2$

$$\left\{\frac{-2 + 2\sqrt{37}}{9}, \frac{-2 - 2\sqrt{37}}{9}\right\}$$

18) $8n^2 + 7n - 15 = -7$

$$\left\{\frac{-7 + \sqrt{305}}{16}, \frac{-7 - \sqrt{305}}{16}\right\}$$

Name_____

Radical Equations - Part 1

Date_____ Period____

Solve each equation. Remember to check for extraneous solutions.

1) $\sqrt{x} = 10$

2) $10 = \sqrt{\dfrac{m}{10}}$

3) $\sqrt{v - 4} = 3$

4) $6 = \sqrt{v - 2}$

5) $\sqrt{n} = 9$

6) $5 = \sqrt{x + 3}$

7) $2 = \sqrt{4b}$

8) $\sqrt{n + 9} = 1$

9) $-8 + \sqrt{5a - 5} = -3$

10) $10\sqrt{9x} = 60$

11) $1 = \sqrt{x - 5}$

12) $-10\sqrt{v - 10} = -60$

13) $10 + \sqrt{10m - 1} = 13$

14) $-12 = -6\sqrt{b + 4}$

15) $\sqrt{v + 3} - 1 = 7$

16) $90 = 9\sqrt{25v}$

17) $\sqrt{3n} = \sqrt{4n - 1}$

18) $\sqrt{2n - 88} = \sqrt{\dfrac{n}{6}}$

19) $\sqrt{\dfrac{x}{10}} = \sqrt{3x - 58}$

20) $\sqrt{3n + 12} = \sqrt{n + 8}$

21) $\sqrt{n} = \sqrt{2n - 6}$

22) $\sqrt{11 - x} = \sqrt{x - 7}$

23) $\sqrt{72 - x} = \sqrt{\dfrac{x}{5}}$

24) $\sqrt{x + 3} = \sqrt{1 - x}$

25) $\sqrt{2k + 40} = \sqrt{-16 - 2k}$

26) $\sqrt{x + 8} = \sqrt{3x + 8}$

Name_____

Radical Equations - Part 1

Date_____ Period____

Solve each equation. Remember to check for extraneous solutions.

1) $\sqrt{x} = 10$

$\{100\}$

2) $10 = \sqrt{\dfrac{m}{10}}$

$\{1000\}$

3) $\sqrt{v - 4} = 3$

$\{13\}$

4) $6 = \sqrt{v - 2}$

$\{38\}$

5) $\sqrt{n} = 9$

$\{81\}$

6) $5 = \sqrt{x + 3}$

$\{22\}$

7) $2 = \sqrt{4b}$

$\{1\}$

8) $\sqrt{n + 9} = 1$

$\{-8\}$

9) $-8 + \sqrt{5a - 5} = -3$

$\{6\}$

10) $10\sqrt{9x} = 60$

$\{4\}$

11) $1 = \sqrt{x - 5}$

$\{6\}$

12) $-10\sqrt{v - 10} = -60$

$\{46\}$

13) $10 + \sqrt{10m - 1} = 13$

$\{1\}$

14) $-12 = -6\sqrt{b + 4}$

$\{0\}$

15) $\sqrt{v + 3} - 1 = 7$

$\{61\}$

16) $90 = 9\sqrt{25v}$

$\{4\}$

17) $\sqrt{3n} = \sqrt{4n - 1}$

$\{1\}$

18) $\sqrt{2n - 88} = \sqrt{\dfrac{n}{6}}$

$\{48\}$

19) $\sqrt{\dfrac{x}{10}} = \sqrt{3x - 58}$

$\{20\}$

20) $\sqrt{3n + 12} = \sqrt{n + 8}$

$\{-2\}$

21) $\sqrt{n} = \sqrt{2n - 6}$

$\{6\}$

22) $\sqrt{11 - x} = \sqrt{x - 7}$

$\{9\}$

23) $\sqrt{72 - x} = \sqrt{\dfrac{x}{5}}$

$\{60\}$

24) $\sqrt{x + 3} = \sqrt{1 - x}$

$\{-1\}$

25) $\sqrt{2k + 40} = \sqrt{-16 - 2k}$

$\{-14\}$

26) $\sqrt{x + 8} = \sqrt{3x + 8}$

$\{0\}$

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Name_____

Solving Rational Equations 1

Date_____ Period_____

Solve each equation. Remember to check for extraneous solutions.

1) $\dfrac{3}{m^2} = \dfrac{m-4}{3m^2} + \dfrac{2}{3m^2}$

2) $\dfrac{1}{n} = \dfrac{1}{5n} - \dfrac{n-1}{5n}$

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

4) $\dfrac{4}{n^2} = \dfrac{5}{n} - \dfrac{1}{n^2}$

5) $\dfrac{3n+15}{4n^2} = \dfrac{1}{n^2} - \dfrac{n-3}{4n^2}$

6) $\dfrac{1}{2n^2} + \dfrac{5}{2n} = \dfrac{n-2}{n^2}$

7) $\dfrac{x-6}{x} = \dfrac{x+4}{x} + 1$

8) $\dfrac{1}{2n} + \dfrac{1}{4n^2} = \dfrac{1}{4n}$

9) $\dfrac{6b+18}{b^2} + \dfrac{1}{b} = \dfrac{3}{b}$

10) $\dfrac{1}{2x} - \dfrac{x-1}{2x^2} = \dfrac{3}{x}$

11) $\dfrac{1}{b^2 - 7b + 10} + \dfrac{1}{b - 2} = \dfrac{2}{b^2 - 7b + 10}$

12) $\dfrac{1}{x^2 - 3x} + \dfrac{1}{x - 3} = \dfrac{3}{x^2 - 3x}$

13) $\dfrac{6}{p} = \dfrac{1}{p - 5} - \dfrac{p + 4}{p^2 - 5p}$

14) $\dfrac{5x - 20}{x^2 - 9x + 18} + \dfrac{1}{x - 6} = \dfrac{x - 4}{x^2 - 9x + 18}$

15) $\dfrac{1}{5k^2 + 2k} - \dfrac{6}{5k + 2} = \dfrac{6}{5k^2 + 2k}$

16) $\dfrac{6}{n^2 - 6n + 8} = \dfrac{1}{n^2 - 6n + 8} - \dfrac{1}{n - 4}$

17) $\dfrac{4}{a} = \dfrac{1}{a^2 + 4a} - \dfrac{a + 3}{a^2 + 4a}$

18) $\dfrac{3}{k^2 + 5k + 6} - \dfrac{k - 6}{k^2 + 5k + 6} = \dfrac{1}{k + 3}$

19) $\dfrac{v - 3}{v^2 + 3v} = \dfrac{1}{v + 3} - \dfrac{v - 5}{v^2 + 3v}$

20) $1 = \dfrac{3}{m + 3} + \dfrac{3m}{m + 3}$

Name_____

Solving Rational Equations 1

Date_____ Period____

Solve each equation. Remember to check for extraneous solutions.

1) $\dfrac{3}{m^2} = \dfrac{m-4}{3m^2} + \dfrac{2}{3m^2}$

$\{11\}$

2) $\dfrac{1}{n} = \dfrac{1}{5n} - \dfrac{n-1}{5n}$

$\{-3\}$

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

$\{-2\}$

4) $\dfrac{4}{n^2} = \dfrac{5}{n} - \dfrac{1}{n^2}$

$\{1\}$

5) $\dfrac{3n+15}{4n^2} = \dfrac{1}{n^2} - \dfrac{n-3}{4n^2}$

$\{-2\}$

6) $\dfrac{1}{2n^2} + \dfrac{5}{2n} = \dfrac{n-2}{n^2}$

$\left\{-\dfrac{5}{3}\right\}$

7) $\dfrac{x-6}{x} = \dfrac{x+4}{x} + 1$

$\{-10\}$

8) $\dfrac{1}{2n} + \dfrac{1}{4n^2} = \dfrac{1}{4n}$

$\{-1\}$

9) $\dfrac{6b+18}{b^2} + \dfrac{1}{b} = \dfrac{3}{b}$

$\left\{-\dfrac{9}{2}\right\}$

10) $\dfrac{1}{2x} - \dfrac{x-1}{2x^2} = \dfrac{3}{x}$

$\left\{\dfrac{1}{6}\right\}$

11) $\dfrac{1}{b^2 - 7b + 10} + \dfrac{1}{b - 2} = \dfrac{2}{b^2 - 7b + 10}$

$\{6\}$

12) $\dfrac{1}{x^2 - 3x} + \dfrac{1}{x - 3} = \dfrac{3}{x^2 - 3x}$

$\{2\}$

13) $\dfrac{6}{p} = \dfrac{1}{p - 5} - \dfrac{p + 4}{p^2 - 5p}$

$\left\{\dfrac{13}{3}\right\}$

14) $\dfrac{5x - 20}{x^2 - 9x + 18} + \dfrac{1}{x - 6} = \dfrac{x - 4}{x^2 - 9x + 18}$

$\left\{\dfrac{19}{5}\right\}$

15) $\dfrac{1}{5k^2 + 2k} - \dfrac{6}{5k + 2} = \dfrac{6}{5k^2 + 2k}$

$\left\{-\dfrac{5}{6}\right\}$

16) $\dfrac{6}{n^2 - 6n + 8} = \dfrac{1}{n^2 - 6n + 8} - \dfrac{1}{n - 4}$

$\{-3\}$

17) $\dfrac{4}{a} = \dfrac{1}{a^2 + 4a} - \dfrac{a + 3}{a^2 + 4a}$

$\left\{-\dfrac{18}{5}\right\}$

18) $\dfrac{3}{k^2 + 5k + 6} - \dfrac{k - 6}{k^2 + 5k + 6} = \dfrac{1}{k + 3}$

$\left\{\dfrac{7}{2}\right\}$

19) $\dfrac{v - 3}{v^2 + 3v} = \dfrac{1}{v + 3} - \dfrac{v - 5}{v^2 + 3v}$

$\{8\}$

20) $1 = \dfrac{3}{m + 3} + \dfrac{3m}{m + 3}$

$\{0\}$

Vocabulary

Sum – answer to an addition problem

Difference – answer to a subtraction problem

Product – answer to a multiplication problem

Quotient – answer to a division problem

Factor – a number being multiplied

Coefficient – the constant value of an algebraic expression

Expression – a sum, difference, product or quotient containing variables and/or constants

Equation – a defined relationship between two expressions

Simplify – to do all operations that can be done (if there is no equal sign, you cannot solve for the unknown)

Factoring – to reverse the process of multiplication in order to identify the original factors

Solve – only equations can be solved for a variable

Evaluate – use substitution to rewrite an expression using only constants and find the overall value

Radicand – the expression found under a radical hat

Index – AKA "root" of a radical expression

Constant – a number or symbol that represents a constant value ($\pi \approx 3.14, e \approx 2.72$)

Variable – represented with a letter; its value will vary (change)

Integer – (…, -3, -2, -1, 0, 1, 2, 3, …)

Irrational – a number that *cannot* be expressed as a fraction of integers ($\sqrt{3}, \pi, e, …$)

Rational – any number that can be expressed as a *fraction* of integers ($\frac{1}{3}, 2.5, \sqrt{25}, \frac{\sqrt[3]{27}}{\sqrt{16}}, …$)