Name: _____ Date: _____ Key

Algebra 2 – Rational Functions Summary

$\frac{-1}{(c-d)(c+d)}$

$(d+2c)(d-c)$

5.

(3) Written in simplest form, $\frac{c^2 - d^2}{d^2 + cd - 2c^2}$ where $c \neq d$, is equivalent to

(1) $\frac{c+d}{d+2c}$

(2) $\frac{c-d}{d+2c}$

(3) $\frac{-c-d}{d+2c}$

(4) $\frac{-c+d}{d+2c}$

6.

(1) The function $f(x) = \frac{x-3}{x^2+2x-8}$ is undefined when x equals

(1) 2 or −4

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

(2) 4 or −2

(3) 3, only

(4) 2, only

7.

$\frac{2x^2}{x(x-2)} - \frac{11(x-2)}{x(x-2)} = \frac{8x(x-2)}{x(x-2)}$ $=$ $2x^2-11x+22=8$

$-8 \quad -8$

(1) To solve $\frac{2x}{x-2} - \frac{11}{x} = \frac{8}{x^2-2x}$, Ren multiplied both sides by the least common denominator. Which statement is true?

(1) 2 is an extraneous solution.

(2) $\frac{7}{2}$ is an extraneous solution.

(3) 0 and 2 are extraneous solutions.

(4) This equation does not contain any extraneous solutions.

$2x^2-11x+14=0$

$(2x-7)(x-2)=0$

$\frac{7}{2}, 2$

8.

Completely factor the following expression:

Reorder ⟶ $x^2 + 3xy + 3x^3 + y$

$x^2+3x^3+3xy+y$

$x(x+3y)+1($

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

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

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For each statement or question, choose the word or expression that, of those given, best completes the statement or answers the question.

1. For all values of x for which the expression is defined, $\frac{x^3+2x^2-9x-18}{x^3-x^2-6x}$, in simplest form, is equivalent to

(3)

(1) 3

(3) $\frac{x+3}{x}$

(2) $-\frac{17}{2}$

(4) $\frac{x^2-9}{x(x-3)}$

$$\frac{x^2(x+2)-9(x+2)}{x(x^2-x-6)}$$

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

2. What is the solution set of the equation $\frac{2}{x}-\frac{3x}{x+3}=\frac{x}{x+3}$?

(4)

(1) {3}

(3) {−2,3}

(2) $\left\{\frac{3}{2}\right\}$

(4) $\left\{-1,\frac{3}{2}\right\}$

$x(x+3)$

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

$$0=4x^2-2x-6$$

$$0=2(2x^2-x-3)$$

$$0=2(2x-3)(x+1)$$

$0=2x-3$ | $x+1=0$

$x=\frac{3}{2}$ | $x=-1$

3. A manufacturing plant produces two different-sized containers of peanuts. One container weighs x ounces and the other weighs y pounds. If a gift set can hold one of each size container, which expression represents the number of gift sets needed to hold 124 ounces?

(3)

(1) $\frac{124}{16x+y}$

(3) $\frac{124}{x+16y}$

(2) $\frac{x+16y}{124}$

(4) $\frac{16x+y}{124}$

$x + 16y$

4. The focal length, F, of a camera's lens is related to the distance of the object from the lens, J, and the distance to the image area in the camera, W, by the formula below.

(3)

$$\frac{WF}{WJ}+\frac{1}{W}=\frac{1}{F}$$

$$\frac{WF+JF}{WFJ}=\frac{WJ}{WFJ}$$

When this equation is solved for J in terms of F and W, J equals

(1) $F-W$

(3) $\frac{FW}{W-F}$

(2) $\frac{FW}{F-W}$

(4) $\frac{1}{F}-\frac{1}{W}$

$$WF+JF=WJ$$

$$WF=WJ-JF$$

$$\frac{WF}{W-F}=\frac{J(W-F)}{W-F}$$

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Algebra 2 – Rational Functions Summary

9.

Algebraically prove that $\frac{x^3+9}{x^3+8} = 1 + \frac{1}{x^3+8}$, where $x \neq -2$.

x^3+8

$x^3+9 = x^3+8+1$

$x^3+9 = x^3+9$

10.

Algebraically solve for x:

$\frac{6(x+3)}{1}\left[\frac{-3}{x+3} + \frac{1}{2} = \frac{x}{6} - \frac{1}{2}\right]$

$-18+3(x+3) = x(x+3) - 3(x+3)$

$-18+3x+9 = x^2+3x-3x-9$

$-18 \quad 3x = x^2$

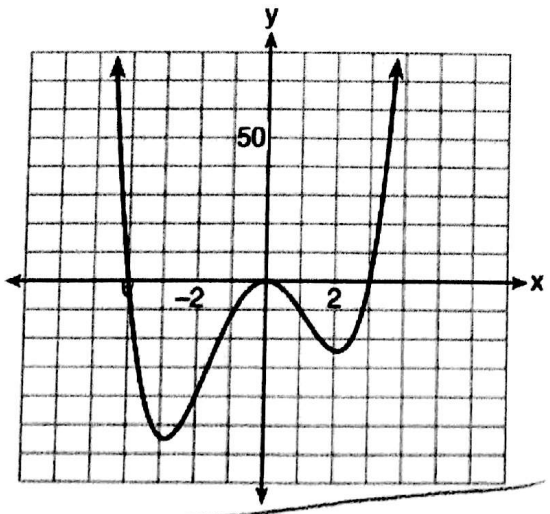
$x^2-3x=0$

$x(x-3)=0$

$x=0,3$

11.

The graph of $y = f(x)$ is shown below. The function has a leading coefficient of 1.



Write an equation for $f(x)$. $y = 1(x+4)(x)^2(x-3)$